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ABSTRACT

Eighty papers from a 1984 international conference on improving university teaching are presented. Topics include the following: predicting achievement and overcoming disadvantages for first-year students, the impact of technology on higher education, using student conceptions of learning and teaching, problems and solutions for teaching effectively, academic administrators, testing and teaching first-year students in mathematics and science, reducing student attrition, developing faculty as teachers, project methods in engineering, optimizing teaching for different kinds of students, institutional planning with a focus on campus climate and community needs, planning and "megatrends" for teaching in higher education, students and writing, uses of computers in teaching, experiential approaches to teaching, aspects of lecturing, experiential learning programs, and an international perspective on the evaluation of teaching. (SW)

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Improving University Teaching

Tenth International Conference

II

Contributed Papers

July 4-7, 1984
College Park, Maryland

Under the auspices of
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FIRST-YEAR STUDENTS: PREDICTING ACHIEVEMENT, OVERCOMING DISADVANTAGES

WEDNESDAY, 4 JULY

1400 - 1530

USING THE COGNITIVE DIFFICULTIES OF DISADVANTAGED STUDENTS TO IMPROVE UNIVERSITY TEACHING

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University of the Western Cape

INTRODUCTION

University achievement and problem-solving ability are in many cases, almost synonymous. It is thus hardly surprising that there is a renewed interest among educators from various disciplines in the mental mechanisms which are required as persons attempt to solve problems. Indeed, the view has been expressed by Simon (1979) that creativity is in essence, the act of a human solving a complex problem. This area of research has been facilitated by the information processing approach of cognitive psychologists.

Using the techniques of think-aloud protocols, Larkin et al (1980) have examined the difference in the manner in which experts and novices solve physics problems. They show that an important component of the problem-solving ability of an expert is a production system where each production consists of a condition-action unit: the recognition of a particular condition in the problem is instrumental in "firing" the appropriate action. This is similar to the approach of Landa (1976) which establishes the central role of algorithms and heuristics in effective teaching and learning.

Most of the general heuristics developed follow the same pattern (Polya,1957) viz.: (a) Problem analysis; data interpretation

(b) Use of relevant concepts in developing a coherent plan.

(c) Execution of plan.

(d) Analysis of results.

Lately the computer has been used in helping students master a heuristic of this nature (Van Humbeeck et al, 1982).

While most of these approaches present relatively coarse heuristics, a finer-grained analysis of some of the above steps, giving more specific mental operations needed for solving problems, is given by Reif (1983). It is to this level that the present paper addresses itself.

While concern has been expressed of analyses of cognitive operations which are too fine-grained (Pickthorne,1983) it must be remembered that certain cognitive inabilities of students may manifest themselves on a molecular rather than a molar level. An examination of the problems of cognition of disadvantaged students enables us to give substance to this contention. And since "the learning problems of disadvantaged students are those of the general student population, only more severe" (McDermott, 1980) this analysis enables us to identify possible pitfalls in general problem-solving heuristics.

A PARADIGM FOR UNDERSTANDING THE LEARNING PROBLEMS OF DISADVANTAGED STUDENTS

It is well-known that persons from certain ethnocultural groups and socioeconomic circumstances underperform, especially at university level. Such students are generally characterised as disadvantaged. A very cogent indication of what can be done about this condition has been given by Feuerstein and his co-workers (1979, 1980). In their words:

> "The term "retarded performer" is used by us to convey the idea
> that what is retarded is the individual's manifest cognitive
> behaviour as reflected in his performance, and not his capacity."

They regard socioeconomic circumstances and related deprivation as secondary causes of academic disadvantagement. The primary determinant of retarded performance is embodied within an interesting psychosocial theory called Mediated Learning Experience (MLE). It is postulated that a lack of MLE results in cognitive functions which are deficient in the three phases of the mental act viz.:

i) Input : this relates to the manner in which data in a given problem is interpreted by the person

ii) Elaboration : this concerns the ability to use the data in searching for a solution in some orderly fashion.

iii) Output: this phase of the mental act enables the person to communicate the result of (ii).

Thirty years of research with disadvantaged Israelis have enabled them to compile a comprehensive list of cognitive functions which are deficient in underperformers.

The students who are the subjects of the present study are all at the University of the Western Cape in Cape Town, South Africa. Within the South African racial structure the university caters primarily for socalled "Coloured" students (i e not white but also not black). Many of the students come from a low socioeconomic environment with poor schools staffed frequently by underqualified teachers. Their academic success-rate is low - in the Faculty of Science a pass-rate of around 25% is normal for first year students. Most of those who repeat the first year (having failed at their first attempt), do significantly better than average.

While many reasons are usually advanced for their poor performance, this study attempted to establish whether the students did display some of the cognitive deficiencies documented by Feuerstein et al. In addition to these (which can be regarded as cognitive functions on a molecular level) some molar deficiencies are also highlighted. While the research was conducted within the context of Physics, the results can easily be generalised.

METHOD OF RESEARCH

The interactive person-to-person interview technique was adopted to determine thinking difficulties students experienced as they worked through two standard first year university physics problems. The problems are the following:

1. At the instant the traffic light turns green, a car starts from rest with a constant acceleration of $2\ \mathrm{m\ s^{-2}}$. At the same instant a truck, travelling with a constant speed of $10\ \mathrm{m\ s^{-1}}$ passes the car.
   a) How far beyond the starting point will the car overtake the truck?
   b) How fast will the car be travelling at this instant?

2. A lift, height 3 m, accelerates upward at $2\ \mathrm{m\ s^{-2}}$. At the instant that its velocity is $2\ \mathrm{m\ s^{-1}}$, a screw falls from the roof of the lift.
   Calculate:
   a) how long the screw will take to reach the floor of the lift
   b) what distance it has then fallen.

Both problems are from the kinematics section of the first year Physics course and are characterised by the fact that no answer is possible by simply inserting values into the three formulae well-known to the students viz $v = u + at$; $s = ut + \frac{1}{2}at^2$; $v^2 = u^2 + 2\ as$, although these formulae are the ones required for solution of both problems.

All the interviews incorporated prompts when students were unable to proceed. Thirty three interviews were conducted over a period of about two months, each interview lasting about 45 minutes. In all cases the students had completed the relevant section of work in the formal lectures and tutorial classes before being interviewed.

RESULTS AND DISCUSSION

It seems possible to establish three distinct categories of difficulties which students experienced as they attempted to solve the problems.

A. SEMANTIC DIFFICULTIES

It is clear that students, in reading problems, do not necessarily interpret words correctly within the context of the problem. Some examples are the following:

i) the screw "falls" in problem 2 : all thirty three students interviewed indicated that the screw moved downward from the instant that it comes loose from the roof of the lift. When asked, all said that an object cannot fall upward. Yet, of course, an object which is in free fall, i e moving under the influence of gravity alone, can move in any direction depending on its initial velocity. The word "falls" acted as a complete distractor to all the students and even if all subsequent calculations were correct, they would still obtain an incorrect answer to the problem.

ii) A minority of students interpreted the floor of the lift in problem 2 as the ground and introduced a parabolic motion of the screw to enable it to reach the ground.

iii) "at the instant" in problem 1 was seldom interpreted as implying a temporal scale for subsequent events.

B. ERROR FACTORS

These have been defined as errors which are macroscopic in nature and have been related to the frequently documented misconceptions which students have of concepts in science (Pickthorne, 1983). Some of these demonstrated by the interviews include the following:

i) Same position implies same velocity. In problem 1 a number of students answered that when car and truck draw level, they have the same velocity. This has been extensively treated by Trowbridge and McDermott (1979).

ii) The related velocity of two bodies moving together. In problem 2, few students could see that the screw and the lift have the same initial velocity. This appears to be a problem in addition to the semantic difficulties with the word "falls", discussed above.

iii) The screw in problem 2 is seen by a number of students to retain the acceleration of the lift even when falling freely. It appears that the idea of free-fall is not well established.

C. COGNITIVE DEFICIENCIES

A review of the interview protocol indicates clearly that students have great difficulty in analysing data in a well-defined ordered manner. Some of these difficulties have been listed in terms of the cognitive deficiencies enumerated by Feuerstein (Feuerstein, 1980). These include:

1. Blurred and sweeping perception

In each interview recorded, the inability of the students to give a clear visualization of the problems was noted. Even those who were able to do problem 1, had difficulty with problem 2. This is also highlighted by the lack of clarity of detail of many of the sketches attempted. Some of the sketches were only attempted after prompting and even some of those which were spontaneously drawn, reflect a limited awareness of the parameters of the problem or indeed, of the actual physical situation. In many instances, the sketch was used to record only some of the numerical data.

It seems apparent that no real need was perceived to make a qualitative evaluation of the problem situation, with the focus of attention being the obvious perceptual clues embodied in the quantitative data.

That the deficiency of being unable to perceive carefully and accurately is indeed an inhibitor to a student's ability to elaborate a problem, is seen from the fact that when students were helped to visualize the problems more carefully, they were frequently able to solve these without undue difficulty.

2. Unplanned, impulsive and unsystematic exploratory behaviour

Some of the features indicating this type of behaviour are the following:

i) A number of the students read the problem, extracted only the numerical data and immediately proceeded to the equations in an attempt to solve the problem as it is perceived.

ii) Implicit data in the problem is not easily or automatically made explicit. Thus in problem 1, the distances, s, and the time, t, relevant for each body could be readily related by some (although not by any means by all) without it being detailed in the answers. However, in problem 2, where relationships have to be established, e g x for the lift meant $-(3 - x)$ for the screw, this could not easily be done by any of the students. Even the time, t, was not readily seen to be equal for both the lift and the screw. In many instances, the idea implicit in constant velocity, (acceleration = 0) was also confused.

iii) There was very little need felt by students for a careful data analysis of the problem statement in relation to a perceived physical situation even when the student was stuck and could not see which way to proceed. The normal strategy observed under those circumstances was to play around with the equations, trying those not already used.

3. Lack of precision and accuracy

Relating the recorded interviews to the above, the following may be noted:

i) Students gave conflicting responses within the course of discussion as regards the same variable.

ii) Students spent very little time checking for accuracy by reflecting on what they recorded. This resulted in their writing "t" for "t^2" and proceeding incorrectly. Or they would write down an incorrect numerical value after reading the problem and continue with the wrong value.

iii) A number of the students also did not distinguish between the symbols they used for the variables for the different bodies by using the necessary subscripts or whatever. In one case at least, this resulted in the equating of velocities of truck and car in problem 1.

4. Impaired use of two of more sources of information

This is categorized as follows (Feuerstein, 1980):

> "The use of two sources of information is a prerequisite to thinking because it is the basis of all relational thought processes ......
> If the individual constantly tends to relate to each source of information separately, either successively or alternately, but does not coordinate the two, the elaborative process will be impaired because the relationship between the two sources will not be available for further experiences." (Pp 87, 88)

A careful analysis of the protocols and observations of the students presented above, isolated this deficiency as perhaps being the root of the inability of some to deal with the problems. The following observations seem germane to the situation:

i) Most students examine the numerical data of each object separately. Where there is overlap between the data of the two objects (as, for example, distance x travelled by the lift and distance 3 - x travelled by the screw) this is not spontaneously done.

ii) Even qualitatively, each motion appears to be analysed separately. The need to analyse the combined motion appears to be lacking and indeed the ability to do so is markedly deficient in most of those interviewed.

IMPLICATIONS FOR UNIVERSITY TEACHING

It is clear that any successful application of a general problem-solving heuristic by students must take cognizance of the very real cognitive difficulties which may be encountered. Many educators will recognize the above list as applicable in some degree to those they teach. Disadvantaged students often enable these deficiencies to be clearly identified because of the severity thereof in their case. Indeed, at the other end of the scale, the expert with a high level of automaticity of these cognitive functions, may be unaware of their existence.

The first step of the problem-solving heuristic viz Problem analysis; data interpretation; contains a number of cognitive operations which need to be made explicit. At the University of the Western Cape a special problem-solving course is now being given to first year students. The course consists of helping students solve problems by applying a general heuristic. The single first step above is redesigned as follows:

PROBLEM IDENTIFICATION VISUALIZATION QUALITATIVE ANALYSIS
PROBLEM GOAL ANALYSIS NUMERICAL DATA ANALYSIS IMPLICIT DATA
ANALYSIS

In an effort to produce a degree of automaticity into student application of the heuristic a course is being developed on the PLATO system of Computer Based Education. The PLATO Learning Management (PLM) software package is being used. This enables random generation of problems taken from Physics, Chemistry, Mathematics and general language comprehension. The student is obliged to follow the sequence of steps outlined above, taking one step at a time across the range of problems. While no results are yet available, student enthusiasm is encouraging.

CONCLUSION

The results of this research underscores the importance to education in general, and university teaching in particular, of the growing interest in cognition as a determinant of academic success. Our own experience with disadvantaged students illustrates how much needs to be done to enable many more to realize this undoubted potential.

BIBLIOGRAPHY

1. FEUERSTEIN R et al : Instrumental Enrichment : An Intervention Program for Cognitive Modifiability. University Park Press 1980.
2. FEUERSTEIN R et al : The Dynamic Assessment of Retarded Performers : The Learning Potential Assessment Device. University Park Press 1979.
3. LANDA L A: Instructional Regulation and Control : Cybernetics, Algorithmization and Heuristics in Education. Educational Technology 1976.
4. LARKIN J, McDERMOTT J, SIMON D P, SIMON H P : Science 208 (1335-1342) June 1980.
5. McDERMOTT L C et al : Journal of College Science Teaching 9 (135-140) 1980.
6. PICKTHORNE B: Instructional Science 11 (281-312) 1983.
7. POLYA G : How to solve it. Princeton University Press. 2nd Edition 1957.
8. REIF F : "Understanding and Teaching Problem Solving in Physics". Lectures at the International Summer School on Physics Education, France, June-July, 1983
9. SIMON H A : "The Processes of Creative Thinking" (with Newell A & Shaw J C) Models of Thought. Yale University Press 1979.
10. TROWBRIDGE D & McDERMOTT L: American Journal of Physics 48(12) 1980.
11. VAN HUMBEECK G, BOVEZIG R, VAN BROEKHAVEN R : Higher Education, 11 (475-483) 1982.

COMPUTER-BASED MATH AND SCIENCE COMPENSATORY INSTRUCTION FOR SCHOOL LEAVERS - a case study

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1. INTRODUCTION

Reflecting on the role of universities in developing countries, the International Association of Universities remarks "that their research programs should emphasize not so much the production of new knowledge as the application of existing knowledge to local problems."[1.] Two years ago at an IUT conference I gave details of a plan whereby the University of the Western Cape (UWC), a community based university in the Republic of South Africa (RSA), intended to reach out to the educational needs of the broader community through computer-based instruction.[2.] One of the projects was a mathematics/sciences matriculation outreach project to Black and Coloured secondary schools. This programme has since materialised and what follows is a modest attempt to give a cursory overview of the programme, the basic rationale behind it and preliminary findings to date.

At present nearly 800 pupils from fifteen schools are bused to the University campus every week. This works out at an approximately three hour session per school per week. The programme which is an after-hours programme, i.e. weekday afternoons and two sessions on a Saturday, stretches over the full academic year and is totally integrated with the classroom work.

2. TYPE OF PROGRAMME

The outreach programme makes provision for compensatory instruction in mathematics and science for school leavers. Compensatory instruction is, for the purposes of this paper, defined as educational practices designed specifically to overcome or forestall educational deficits associated with adverse environmental circumstances, especially those adverse environmental circumstances differentially affecting different population subgroups.[3.] The environmental circumstances in our case are of a socio-economic nature, adverse circumstances which tend to lock students into the relative statuses of their milieux. Our assumption is that with systematic assistance the deficiencies in some basic processes of thought, learning problem-solving and construction of reality can be modified.

3. COGNITIVE EDUCATION

The goal of the programme is twofold: in the short term to improve the education of the pupils, i.e. their achievement in the specific subject fields. In this case the learning deficiencies are actually left untouched and only their debilitating effects circumvented.[4]

In the long run we hope to improve the students' educability, i.e. to enchance their learning efficiency. Learning efficiency implies that the student learns to think. Learning to think, however, is countered by negative fear of failure, a characteristic of the learning disadvantaged student. According to De Leeuw[5] students with a negative fear of failure need much more help and achieve poorly in a relatively unstructured situation.

The implication of De Leeuw's finding is that the LD student should have access to assistance whenever he needs it [6] till he gradually gains the necessary confidence and skills to work on his own. Furthermore this assistance should be presented in a structured way.

The computer, and computer-managed instruction in particular, has the potential to provide the assistance and guidance which is continually needed.

4. TARGET GROUP

The pupils we reach out to are all final-year high school pupils, i.e. they have completed eleven years of schooling. They are learning disadvantaged (LD) in the sense that their achievement is hampered by environmental circumstances.[7] Feuerstein et al describe learning disadvantagement as follows: "A disadvantaged student is one who shows a level of cognitive activity which is retarded as measured by his present performance but which does not necessarily reflect his potential cognitive capacity."[8]

Our pupils come from predominantly low-skill blue-collar households, and the serious effects of this environment are revealed in the following statistics: Less than 2% of the Black pupils who started school in 1963 completed thirteen years of schooling. What the child from this milieu needs, is an equalised opportunity to learn. Unfortunately, the classroom alone is seldom a relevant achievement domain[9] simply because it does not provide differential treatments for particular backgrounds.[10]

5. CONTROL FOR HISTORICAL FACTORS

Our main concern was to what extent the LD student would be receptive, also in a cognitive sense, to computer-based instruction. Studies done on Afro-Americans' cognitive style could lead to the conclusion that the difference in school success is attributable to the use of sociocentric, field-dependent, nonanalytic categorizing information processing strategies. Because this style is not the strategy preferred in an educational setting, racial differences would occur.[11]

What is more, the very basic educational philosophy behind computer-based instruction, viz. the individualisation of instruction, may turn out to be in direct opposition to the personality style of the Black child. The communal or group orientation of the Black child is a structuring feature of his whole upbringing[12] with the result that he seems to demonstrate a preference for a cooperative learning situation. "The preference is manifested through a strong interest in other people, a need and desire to be physically close to people, or preference for social situations, and attentiveness to social cues. These individuals have been identified as particularly well suited for working in cooperative, humanistic situations.[13]

Another of our concerns was to what extent pupils would survive long-term exposure to CBI, whether the interaction with the computer would not make stressful academic demands.[14] It has been shown that students with low-efficacy expectations, a characteristic of LD students, will be threatened and will react with high levels of achievement anxiety. Achievement anxiety can be defined as worry and emotionality in an achievement situation where one's performance is under scrutiny and the acting person self-aware.[15]

6. LEARNING LABORATORY CONFIGURATION

We place three to four pupils per terminal. This arrangement has turned out to be very productive. If children from a deprived milieu are characterised by elevated levels of anxiety, relatively low levels of curiosity and exploratory behaviour, a characteristic orientation towards failure-avoiding rather than towards success-striving, task-extrinsic rather than task-intrinsic motivational orientation, and a negative self-concept,[16] a small-group arrangement combined with the interaction with the terminal is in itself therapeutic: the user-friendliness of the software, the availability of help - on-line and in person, group-enhanced support including other-regulation,[17] the visible experience of success, positive feedback. The continuous interaction with the terminal brings about a task-oriented behaviour which results in better achievement.[18.] At the same time the group situation counters learner helplessness.[19.] Studies have also shown that when students compete in groups less training time is required.[20.]

The action-oriented approach, where the emphasis is on actions, and which is characteristic of Eastern European psychology, differs sharply from the American information-processing approach.

But the main reason why we place three to four pupils in front of a terminal is a philosophical one. I referred earlier to the communal or group orientation of the Black child and how it is a striking feature of his upbringing. In developing an educational setting for a child from this milieu the early Soviet educational strategy applied between World War I and World War II to large numbers of orphans provides important guidelines on socialising teaching methods.[21.] In educational practice this means that the subdivision into subgroups is primarily based on criteria such as personality and established friendships and not in the first place according to ability. The division is therefore basically a natural one. All competitiveness occurs between the groups not the individuals. "Since each child's status depends in part on the standing of the collective of which he is a member, it is to each pupil's enlightened self-interest to watch over his neighbor, encourage the other's good performance and behavior and help him when he is in difficulty."[22.]

If we take the group-oriented upbringing of the Black child into consideration, any situation in which the pupil belongs to a group from which he might receive help when he needs it, would stimulate his confidence and help him overcome his reluctance to excel as an individual. At the same time the group situation is non-threatening.

The mere fact that help is always available, either from the group or on-line should be commented on. This very feature benefits the Black pupil in particular, considering that on the one hand Black parents - for a variety of reasons - do not traditionally involve themselves deeply in their children's education, and on the other hand they themselves have had limited education. The help, in other words, ensures that a pupil does not get stuck, that he makes progress, which is in itself a stimulation.

On our side we try to be as sensitive as possible and gather as much information as we can, either by direct observation, person to person discussion or through questionnaires, in order to trace any signs of regression, whether because of the particular group arrangement, an error in the execution of a problem, inadequate on-line help, or the atmosphere created by the communicative style of the courseware.[23] Although methods have been devised to test the integrity of programmes[24] no general method has as yet been developed to test the overall educational appropriateness of the computer's responses. The only way to do this is through continuous observation.

7. COMPUTER-MANAGED INSTRUCTION

It has often been pointed out that the computer's greatest potential in the educational field lies at management level. Berkman, for example, goes as far as to say that computer-managed instruction is "perhaps the only reality-centred undertaking the learning industry has so far attempted."[25] As far as LD students are concerned, Frederico sees the value of computer-managed mastery learning in the fact that it is "individualized instruction based on carefully defined objectives, hierarchical in its content, modular in its presentation and assessment, with diagnostic achievement tests and immediate feedback on student progress; it structures, segments and directs learning ... doing for them (the students) what they cannot do for themselves."[26] This model is fully applicable to the personality of the Black pupil on condition that "individualized" is not interpreted as one student per terminal, but as a small group.

In our outreach programme we make use of a software package called PLM (PLATO Learning Management), which has the following operational features: testing, diagnosis, prescription of learning resources, retesting, data collection.

The courseware which is used, is called SASSC (South African Secondary School Curricula). It consists essentially of instructional units (IU's) each with its own heuristic learning paradigm. The ability of the student to master the various objectives is tested by banks of questions. Inability to reach the required criteria, usually set at 75%, results in the student being channelled to prescribed learning resources, on-line or in print. After having worked through these resources the individual groups of students are retested before embarking on the next step. On-line learning resources primarily consist of drill and practice excercises. References are, however, also made to textbooks, which are placed next to each terminal.

The test-learn-test situation has proved to be a highly successful arrangement for the inculcation of knowledge and skills.[27]

The data collection facility enables us to monitor the usage of each group as a whole or groups per terminal, their course progress, average module test duration, average number of tests in a particular unit, the number of tests taken before mastery level, etc. This kind of information on pupils' learning history is of critical importance both in terms of remediation and feedforward planning.[28]

It is standard practice that the subject teachers, who accompany the pupils on all occasions, receive a print-out every time their pupils have had a session.

But there is also a methodological reason. There is no one-to-one relationship between the way a programme is designed and the student's execution of that programme. No algorithmic scheme of operations and decisions, complete as it may look, can guarantee that the student won't make mistakes, which makes control of data on the execution process indispensable. "Effective control is usually adaptive, which means that it entails constant analysis of the state of the system which is being influenced and the dynamic adaptation of the controlling influences to these states.[29]

The SASSC material at present covers grades 10, 11 and 12 in mathematics and grades 11 and 12 in physical science.

8. INSTRUCTIONAL MATERIALS

Reference has been made to the SASSC material in PLM mode and to the fact that one of the important learning resources consists of drill and practice lessons. The importance of drill and practice exercises as a learning heuristics is substantiated in the literature.[30] Burns and Bozeman, for example, found that mathematics programmes supplemented with computer-implemented drill and practice were significantly more effective in fostering achievement than programmes using only traditional methods.[31]

The underlying rationale behind drill and practice exercises in problem-solving as a learning strategy is best summed up by Willems:[32]

> Apart from knowledge about a certain subject, the students have to acquire certain necessary operations in order to be able to work with that knowledge.
>
> The operations and rules have to be taught explicitly.
>
> If the students are to acquire these rules as algorith-

mic knowledge and the knowledge contained as functioning propositional knowledge, they have to learn this by working on problems.
Learning propositional knowledge and learning algorithmic knowledge have to take place step by step.

Domain specific knowledge, factual and functional, helps to provide structure to a perceptual chunk, provides meaning to the perceived information and guide perceptions at any given moment.[33.]

In the SASSC drill and practice exercises students are confronted with a variation of execution and solution methods; in this way a heuristic structure of problem-solving techniques is inculcated.[34.]

Novice students usually try immediately to generate the solution of a problem and, as a result of inadequate preparatory work, come unstuck in their efforts to solve the problem.[35.] By working through problems the student acquires both information (a knowledge base) and the anticipated cues whose subsequent appearance will promote recall at the right moment and in the right way. "The selection of tasks is determined first of all by concrete content of the actions, selected as a means of acquiring the desired knowledge. These tasks must be problems intended to be solved by application of the selected action. If the action will not be applied in solving the problems, it will not be acquired by the pupils as an action; at best they will remember it."[36.] This action-oriented approach can counter the tendency among Black pupils to rely on rote learning.[37.]

The SASSC curriculum is designed in such a way that students have to solve increasingly difficult problems. In this way the standard grade pupils are encouraged to tackle not only the easy questions but also those of medium difficulty, while the higher grade pupils are encouraged to tackle the difficult questions as well.

9. AFFECT

There is a body of research which provides evidence that affect is more strongly related to achievement than is cognitive stability.[38.] And although it remains an open question as to what extent achievement, cognitive ability and affect are interrelated, I should like to believe that achievement can lead to affect. Tsai and Walberg investigated the dependence between mathematics achievement and attitude and found that constructive mathematics attitudes were associated with achievement.[39.] And according to Fennema and Sherman [40.] affective factors not only affect the amount of effort one is willing to exert to learn mathematics but also have great influence on the choice of mathematics courses beyond requirements.

In the case of the outreach programme, the mere fact that these pupils experience visible success, perhaps for the first time, results in a totally different attitude towards these subjects. This is dramatically proved by the fact that the outreach students who enrolled for university studies this year predominantly enrolled for a science degree.

10. RESULTS

To come forward with results after only one year is dangerous, especially if one keeps De Leeuw's warning[41.] in mind that "raw change" scores formed by subtracting pretest scores from posttest scores, may lead to fallacious conclusions.

What we did, by way of a beginning, was to look critically at the end-of-year results and the stability of the general teaching context at each school over the past three years. The greatest variable factor was a significant increase in the number of pupils at most of the schools.

From an angle of sheer average results per class the picture looks very encouraging. We succeeded in raising the class average by at least 15% in the case of one school and 20% and more in the case of the remaining schools. Two concrete examples will suffice. In Langa Senior Secondary School there was an increase in the mathematics pass rate from 15% to 63% and in physical science from 65% to 85%. At Elswood Senior Secondary School the mathematics passrate increased from 30% to 70% and that of physical science from 53% to 79%.

The school leaving examination on which the above figures are based, is a public examination set by the two national educational departments concerned, and any variables in examination standards at the different schools are therefore ruled out.

Even if nothing else has happened, we feel at least that we have crossed the first hurdle, viz. to increase the pupils' chances of obtaining a pass - and preferably a good one - in math and science.

We are at the moment looking at individual results and hope to extrapolate certain guidelines about pupil characteristics and general performance.

11. THE ROAD AHEAD

We shall continue to refine the programme as a whole and the software in particular, adapting it to what we find to be the real needs of the pupils. We hope to expand the computer facilities within the foreseeable future to an extent that we shall be able to reach out to several thousand pupils per week, by means, in addition, of a mobile computer-based learning laboratory. But in the meantime our greatest effort should be towards describing and analysing the programme in greater detail and in the process hopefully to develop a model which will ensure that what we are doing will not remain the idiosyncratic product - however successful - of enthusiastic individuals, to use Larkin's not entirely flattering term.[42]

REFERENCES

1. As quoted by Watson, Keith. 1981. The higher education dilemma in developing countries: Thailand's two decades of reform. Higher Education. 10:299.
2. Sinclair, A.J.L. 1982. Reaching out to the undereducated: new light in dark corners. Improving University Teaching: Eighth International Conference, July 14-17, West Berlin.
3. Haywood, H. Carl. 1982. Compensatory education. Peabody Journal of Education. 59:272.
4. Salomon, G. 1972. Heuristic models for the generation of aptitude-treatment interaction hypotheses. Review of Educational Research. 42:333.
5. De Leeuw, Leendert. 1983. Teaching problem-solving: an ATI study of the effects of teaching algorithmic and heuristic solution methods. Instructional Science. 12:44.
6. Cf. for the positive effects of forms of help, Lysakowski, Richard S. and Herbert J. Walberg. 1982. Instructional effects of cues, participation, and corrective feedback: a quantitive synthesis. American Educational Research Journal. 19:559-578.
7. Shepard, Lorrie A., Mary Lee Smith and Carol P. Vojir. 1983. Characteristics of pupils identified as learning disabled.
8. Feuerstein R. et al. 1980. Instrumental enrichment: a program of cognition modifiability. Baltimore, Maryland: University Park Press.
9. Willig, Ann C., Delwyn L. Harnisch, Kennedy T. Hill and Martin L. Maehr. 1983. Sociocultural and educational correlates of success-failure attributions and evaluation anxiety in the school setting for Black, Hispanic, and Anglo children. American Educational Research Journal. 20:406.
10. Serow, Robert C. and James J. Davies. 1982. Resources and outcomes of minimum competency testing as measures of equality of educational opportunity. American Educational Research Journal. 19:531.
11. Shade, Barbara, J. 1982. Afro-American cognitive style: a variable in school sciences? Review of Educational Research. 52:233.
12. Van den Berg, D.J. 1980. Black education - a new perspective on developing the potentialities of the Black pupil. Humanitas 6:104.

13. Shade, Barbara J. 1982. Op. cit. 229.
14. Schwarzer, Ralf and Christine Schwarzer. 1982. Achievement anxiety with respect to reference groups in schools. *The Journal of Educational Research*. 75:305.
15. Schwarzer, Ralf and Christine Schwarzer. 1982. Op. cit. 305.
16. Haywood, H. Carl. 1982. Op. cit. 275.
17. Swing, Susan R. and Penelope L. Peterson. 1982. The relationship of student ability and small-group interaction to student achievement. *American Educational Research Journal*. 19:272.
18. Gettinger, Maribeth and Harriet R. Fayne. 1982. Classroom behaviors during small group instruction and learning performance in learning disabled and nondisabled children. *Journal of Educational Research*. 75:182.
19. Oren, Ditza L. 1983. Evaluation systems and attributional tendencies in the classroom: a sociological approach. *Journal of Educational Research*. 76:307.
20. Kearsley, Greg P. and Michael J. Hillelsohn. 1982. Op. cit. 81.
21. For the exposition on Soviet eduational strategy I relied heavily on Van den Berg, D.J. 1980. Op. cit. 106.
22. Bronfenbrenner, U. 1971. As quoted by Van den Berg, D.J. 1980. Op. cit. 106.
23. Damarin, Fred and Suzanne K. Damarin. 1983. Response sets: Implications of research on psychological testing for interactive computer-based instruction.
24. Meyers, G.J. 1979. *The art of software testing*. New York: John Wiley and Sons.
25. Berkman, D. 1972. The myth of educational technology. *The Educational Digest*. xxxviii.
26. Frederico, Pat-Anthony. 1983. Changes in the cognitive components of achievement as students proceed through computer-managed instruction. *Journal of Computer-based Instruction*. 9:166.
27. Duchastel, Philippe C. and Ronald J. Nungester. 1982. Testing effects measured with alternate test forms. *Journal of Educational Research*. 75:309-313.
28. Kearsley, Greg P. and Michael J. Hillelsohn. 1982. Human factors considerations for computer-based training. *Journal of Computer-based Instruction*. 8:76.
29. Landa, L.N. 1976. *Instructional regulation and control; cybernetics, algorithmization, and heurictics in education*. New Jersey: Englewood Cliffs.
30. Steele, Kathleen, J., Michael T. Battista and Gerald H. Krockover. 1983. The effect of microcomputer-assisted instruction on the computer literacy of fifth grade students. *Journal of Educational Research*. 76:298.
31. Burns, P.K. and W.C. Bozeman. 1981. Computer-assisted instruction and mathematics achievement: Is there a relationship? *Educational Technology*. 21:32-39.
32. Willems, J. 1981. Problem-based (group) teaching" a cognitive science approach to using available knowledge. *Instructional Science*, 10:12.
33. Dörner, D. 1978. Theoretical advances of cognitive psychology relevant to instruction *in* A.M. Lesgold, J.W. Pelligrino, S.D. Fokkema and R. Glaser (eds.) *Cognitive Psychology and Instruction*. New York: Plenum.
34. Braune, Rolf and Wellerley R. Foshay. 1983. Towards a practical model of cognitive/information processing task analysis and scheme acquisition for complex problem-solving situations. *Instructional Science*. 12:131.

35. Reif, F. 1983. Understanding and teaching problem-solving in physics. Lectures at the International Physics School on Physics Education, La Monde Les Mares, France.
36. Talyzina, N.F. 1973. Psychological bases of programmed instruction. *Instructional Science*. 2 242:280.
37. Van den Berg, D.J. 1980. Op. cit. 97.
38. Steinkamp, Marjorie W. and Martin L. Maehr. 1983. College programs for high-risk and disadvantaged students: a meta-analysis of findings. *Review of Educational Research*. 53:388.
39. Tsai, Shiow-Ling and Herbert J. Walberg. 1983. Mathematics achievement and attitude productivity in junior high school. *Journal of Ecuational Research*. 76:267.
40. As quoted by Schofield, Hilary L. 1982. Sex, grade level, and the relationship between mathmematics attitude and achievement in children. *Journal of Educational Research*. 75:281.
41. De Leeuw, Leendert. 1983. Op. cit.
42. Larkin, J.H. 1980. Teaching problem-solving in physics: the psychological laboratory and the practical classroom in D.T. Tuna and F. Reif, (eds.): *Problem-solving and education: Issues in teaching and research*. New York: Wiley.

PREDICTING FACTORS OF STUDY-SUCCESS IN THE FIRST YEAR AT THE UNIVERSITY.

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INTRODUCTION.

In many countries, national authorities are dealing with the problem of students, failing in the first year of their university-studies. The society very often considers this as wasting a lot of money.

It would be very interesting in that respect, to be able to predict the chance a beginning student has to succeed in the discipline that he has chosen.

If this is possible, one could also re-orientate the chanceless students or strongly advise them to choose a more suitable discipline.

We give here the results of our research on several psychological-intellectual factors that could have some influence on study-succes in the first year. This research has been carried out at the engineering faculty of the Catholic University of Leuven - Belgium.

As a conclusion, we can give a qualitative rule for making a reasonable prediction of study-succes after a few years of experience.

1. INTELLECTUAL CAPACITY.

To make an estimate of this factor, we have made a statistical analysis of students' passing-ratio as a function of their study-results (obtained percentage) in secundary school (highschool) and in the entrance examination.

This analysis is reported by table I and II.

Table I : Passing ratio as a function of Secundary study-result for first year students of the 5 academic years 77-81.

Secundary result (number of students)	50-59% (21)	60-69% (249)	70-79% (634)	≥ 80% (380)	Row Total (1284)
Passing % in 1 year	14.5	40	66	84	66
Passing % in 2 years	28.5	27.5	16	7	16
Total passing %	43	67	82	91	82

It is obvious that the passing ratio is strongly going up as the secundary study results are higher and this effect is stronger after one year while a great deal of the weak students are still passing by spending a second year which is allowed in our system.

Table II : Passing ratio as a function of the obtained percentage in the entrance examination. (first years 77-81)

Entrance examin.result (number of students)	60-69% (712)	70-79% (509)	≥ 80% (168)	Row Total (1389*)
Passing % in 1 year	54	76	90	66
Passing % in 2 years	22	13	5	16
Total passing %	76	89	95	82

* This total is different form the value in table I while there is a number of students whose secundary result is unknown.

Again we see a significant influence of the intelligence (in this case an exclusively mathematical test) on the study-result, which is here considered as the percentage of passing students. The figures in both tables seem very obvious.

Looking however to the more systematic relation which is expressed by the correlation factor in regression calculation, this value looks surprisingly low. For the same group of students as in tables I and II, we found 0.37 for the correlation of study-result in the first year with the secundary school-result and 0.42 with the entrance examination. This obviously means that the study-result is strongly dependent on other, less obvious factors than intelligence. We have investigated all of them in a recently accomplished research project which was excecuted together with the educationalists prof. P.J. Jansen, H. De Neve and P. Henderikx from the University Education Service.

This project consisted of two main parts :

a studytime investigation (1) and a study of several psychologic-behavioral factors (2).

2. STUDY-ACTIVITY.

There are many ways to investigate the study-time, an average student must spend for being allowed to pass to the next year of the curriculum (4) and (5).

Because of our interest in correlation between study-time and study-results and also in the distribution of study-time over the academic year, we have chosen for the so called time-writing method, to register the time all students are spending on all the different study-activities as well as on sleeping and recreation.

This is a very time- and energy consuming method which was however necessary only because of our interest in the distribution of study-time.

We found an average total study-time (programmed hours + selfstudy) of 1868 hours for all students in one year including the first examination session. There was a significant difference between those who were succesful in the first examination-session of july : 1953 hours and those who were not : 1785 hours.

This means respectively an average of 48, 50 and 46 hours per week during the whole year. The standard deviation on this value is of the order of 25%. There is indeed an enormous spread in self-study-time (the highest value is 10 times the lowest one).

It's clear from these figures, that study-time is related to study-succes as pass-fail criterium.

The correlation factor, now taken between the selfstudy-time and the obtained percentage in first session, is still lower than the value for intelligence. It is significant but has only a value of 0.24.

3. ATTITUDE TOWARDS THE STUDY-TASK - STUDY-STRATEGY.

3.1. Direct Results.

From the research work of prof. P.J. Janssen and Dr. M.F. Lacante, a questionair resulted (3) which gave the possibility to determine numerical values for the student's motivation, selfreliance and effort. (this is of course a self-evaluation)

We made a selection of 80 items out of this questionaire which became a very suitable new questionaire for our purpose. The validity of our items has been proved (2).

From the answers on these items, we calculated the direct correlation of the three factors with study-result.

Efforts gives a correlation factor of 0.29, very comparable with that for study-time which is completely normal.

For motivation and selfreliance we found respectively 0.24 and 0.26.

With the same questionaire, it was also possible to find a numerical value for several factors of study-methods and study-technique.

We distinguished : synthesising, structuring, analysing, broadering, memorising, imitating.

Only two of these factors have a significant direct correlation with study-results they are : analysing way of studying : 0.33 and memorising : -0.26 (which means : lower result by more memorising or learning by heart).

The influence of the other factors was more complicated and indirect.

3.2. Further Analysis.

From a deeper analysis of the intercorrelation of all the former factors (intelligence, activity, attitudes, study-techniques), it is possible to generate only three factors , which have an important influence on the study-result in the first year, by combining most of the former ones.

- Intellectual luggage : consists of the results in secundary school and entrance examination and has a correlation factor with study-result of 0.56.

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- Intellectual luggage : consists of the results in secundary school and entrance examination and has a correlation factor with study-result of 0.56.

- Activity : combines effort (as from the questionaire) and study-time and it has a correlation of 0.30.
- Internalising attitude : is a rather complicated factor as it is a composition of : selfreliance, motivation, deep-level study (synthesising, analysing and structuring- and not much memorising).
  Its correlation is 0.29.

Finally, it's interesting to look at the study-result in a dichotomic way of passing or failing.
This is done by determining the discriminantcoëfficiënt (an analogy of the correlation-value) of each factor.
Now the factor activity (0.69) is relatively more important, but still intellectual luggage (0.80) is of most importance.
"Internalising" is here clearly less important (0.39) than "activity".

4. CONCLUSION.

We have been treating the question : which are the important factors that determine the study-succes of a first year student in engineering education.
As a conslusion, we give a description of the qualities and capacities a succesful student should have. The more he has them, the greater is his chance on succes.
Also the order of these qualities is important.
First of all he should be of sufficiently high mathematical-intellectual level.
He also should develop a considerable amount of study-activity : an average of about 50 hours per week or 3.2 hours selfstudy-time for each programmed lecture-hour.

Besides this, he also should be positively motivated for his study-task and have a lot of self-confidence.
His study-strategy should be of deep level (analysing, structuring and synthesising) without too much memorising.
By means of our questionaire, it is possible to determine a numerical value for these personal qualities, at the beginning of the academic year. After some years of comparising these values with students study-results, it will be possible to calculate seriously the chance to succeed for each student.

REFERENCES.

1) N. Van Deynse, M. Smet, P. Hendrikx, H. De Neve, Studietijden en studieresultaten bij eerstejaars Burgerlijk Ingenieur aan de K.U.Leuven, Tijdschrift voor Onderwijsresearch to be published in 1984.

2) P. Henderikx, H. De Neve, N. Van Deynse, M. Smet, Studietijden, studiebeleving en studiestrategieën bij eerstejaars Burgerlijk Ingenieur. Tijdschrift voor Onderwijsresearch to be published in 1984.

3) Lacante,M.F.E., Van Intelligentie, persoonlijkheid, studiestrategie en studeergedrag naar studieresultaat. Pedagogische Studiën, 1983, 60, 289-299.

4) S.E.M. Everwijn, G. Muggen.
Methoden voor het meten van studietijden. Onderwijs in de Maak (Aula 508) Utrecht, Het spectrum 1973.

5) H.F.M. Crombag, E.E.CH.I. Roskam, W.A.T. Meuwese.
Het meten van studiebelasting. Onderwijs in de Maak (Aula 508) Utrecht, Het spectrum 1973.

A RADEX OF NON-COGNITIVE FACTORS OF ACHIEVEMENT AT UNIVERSITY : SOME EMPIRICAL SUPPORT FOR THE CONTROLABILITY AND THE LOCUS DIMENSIONS OF WEINER'S ATTRIBUTIONAL THEORY OF MOTIVATION.

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1. Introduction

During the last two IUT-conferences the results of two pilot studies were put forward in which I traced the major affective and social factors of study achievement during the freshman year at university (Van Overwalle 1982, 1983_a). In one of the seminars, I also presented the provisional results of our most recent research concerning a random sample of freshmen at our university. The results were in some respects remarkable and, at the time I did not yet know a theory which could provide conclusive arguments to answer for the many questions the research had raised (Van Overwalle, 1983_b).

The definite results of our final research will be put forward in this paper. I will also demonstrate that parts of the results fit into the attribution theory of achievement behavior, as developed by Weiner and his colleagues (Weiner 1974, 1979). In both, attribution theory and our research, the subjective experiences and feelings of the individual constitute the basis for research. Some differences however exist. Our research is centered upon empirical results within a specific academic framework, while Weiner's attribution theory takes a general view on achievement behavior. Usually attribution research makes use of experiments; in our research the results are solely based on correlations. In attribution theory the subjects are asked what they perceive as the causes of a certain event; we only ask a description of their study. Notwithstanding these differences in context, method and query, our results are very similar to some aspects of the attribution theory of achievement behavior.

2. Attribution of achievement behavior

Attribution theory preoccupies itself with the WHY question. Every individual will wonder with each new or unforeseen event why things happened the way they did and why they had these results. The answer to this question is of the utmost importance. It enables the individual to organize his environment, to explain past events, and above all to anticipate the future. The aswer allows the individual to look for certain strategies to cope with or solve future problems. It is evident that an individual does not continuously worry why things happened this or that way. In familiar situations the individual can always fall back upon earlier explanations (Frieze 1976). He must no longer think about the causes but can fully preoccupy himself with the efficient management of the situation.

Attributing is a very subjective cognitive proces. However, the only way for an outsider to understand the process of action of an individual, is to know about the subjective explanations. Objectively, attributions can be right or wrong; for the individual they are real and they influence subsequent behavior. There are certain regularities in the process of attributing. To explain certain events the individual either employs a complex search routine or he relies on fixed causal schemes (Kelley 1973). However the process of attribution is often adversely influenced by the inclination to portray oneself as positively as possible (Stephan et al. 1979).

In this paper, perception of causal attributions will not be discussed; the consequences concerning attribution of achievement tasks will be at issue. In the early stages, Weiner's research (1974) was centered on four causal attributions : ability, effort, difficulty and luck. According to the circumstances this list can be supplemented with causes which are, from the participant's view, also important to explain failure or succes. The most common attributions concerning achievement tasks are summerized in the subjoined table. The table is subdivided into locus (internal-external), stability and controlability of attributions. Meyer (1980) affirmed this three-dimensional taxonomy : three similar factors of causal attributions were found after factor analysis.

Table 1 : Causal attributions varying according to controlability, locus and stability. Adapted from Elig & Frieze (1979) and Weiner (1979).

		controlable	uncontrolable
internal	stable	consistent effort consistent desire to do well	general intelligence
	unstable	effort for this task interest in this task	mood
external	stable	teacher bias	difficulty of this task
	unstable	unusual help from others	luck

Weiner and his colleagues have researched the effects of causal dimensions on feelings and probability of succes. They found that the more unstable the ascribed causes, the more changeable probability of succes is. In other words, if a student attributes a failure to changeable causes, he will remain hopeful (Weiner 1974, 1979). The more the causes for student achievement are attributed to oneself (internal) the larger the effect on self-esteem feelings : with failure self-esteem will drop; with succes it will rise (Weiner, Russell & Lerman 1978, 1979).

Much research goes into the dimension of controlability when learned helplessness (Seligman 1975) literature is concerned. If subjects are burdened with unsolvable problems, they will abandon the next problem more easily than untreated subjects (Gregory et al. 1979). In practical terms this means that a student will, after a series of failures (e.g. finals at university) drop out easier unless he himself or others can change his fortunes.

3. Method

Sample : A random sample of 324 freshmen of all departments at the Free University of Brussels was taken. Of this sample, 240 (74%) were interviewed for the first time after the first semester (March), and 184 (57%) were interviewed for a second time after all exam sessions (November).

Inventory : After the hour-long interview, the consulent and the student were asked to describe the study results and study environment by way of five point ratings.

Statistical analysis : Only the variables that correlate significantly ($p<.01$) with the final results are used in further analysis. The final result consists of a scale of eight categories. The first four indicate the degree in which a student participated in exam sessions. The final four are based on the grades. These selective data are visualized by way of a multidimensional scaling technique, MINISSA (Lingoes 1973). The radex structure is tested by CMDA (Borg & Lingoes 1980, see also : Van Overwalle 1984).

4. Results

The main results of our research are represented in figures 1 and 2. To grasp their meaning, one only needs to know that the closer the variables are to the center of the figure (labeled result), the higher their correlation with freshman achievement is. The circles of the radex make a disctinction between central (=high), medial (=average), and peripheral (=low) predictors. The axes of the radex make distinction between homogeneous clusters of predictors. The important advantage of a radex is that predictability and homogenity can be visualized simultaneously. The radex of figures 1 and 2 is confirmed by Lingoes & Borg's (1983) guider ($\% < .07$) and by Hubert & Golledge's (1981) heuristic ($p > .03$).

5. Discussion

The geographical representation of figures 1 and 2 can be summarized by two striking characteristics. The first characteristic is that both figures can be broken up into a left an a right side. I called the left side "motivation", the right side "ability". The second characteristic is that especially, the evaluation of method and progress of study on the one hand, and the self-evaluation as a student and future probability of succes on the other hand, prevail as the most important predictors of study achievement. An important exception to this is the average result of mid-term exams. This objective data, two to three months before the finals, reaches a correlation of .67 with the final results. However, this correlation is artificially high because the final results are partly determined by the mid-term results.

One can argue that our research is only based on correlations, not providing any proof of causality. According to this viewpoint, items of evaluation are only good indicators but no cause for study achievement. My aim is to prove the contrary. Study- and self-evaluation are more than mere indicators, they are real causes of study achievement. To prove this I have to be able to demonstrate (1) how study- and self-evaluation are built and (2) how these subjective evaluations have an effect on study achievement. Let me first raise the question of development of study- and self-evaluation.

Weiner and his colleagues have proved that subjective judgments of the causes of succes and failure, have repercussions on the interpretation of locus, stability and controlability. A part of Weiner's taxonomy, namely the locus and controlability dimensions, can be integrated into our results. First, on the outside of figures 1 and 2 are the external factors, in the middle the internal factors, and in the centre the study- and self-evaluation. Secondly, the left side which I called motivation, consists of contro-

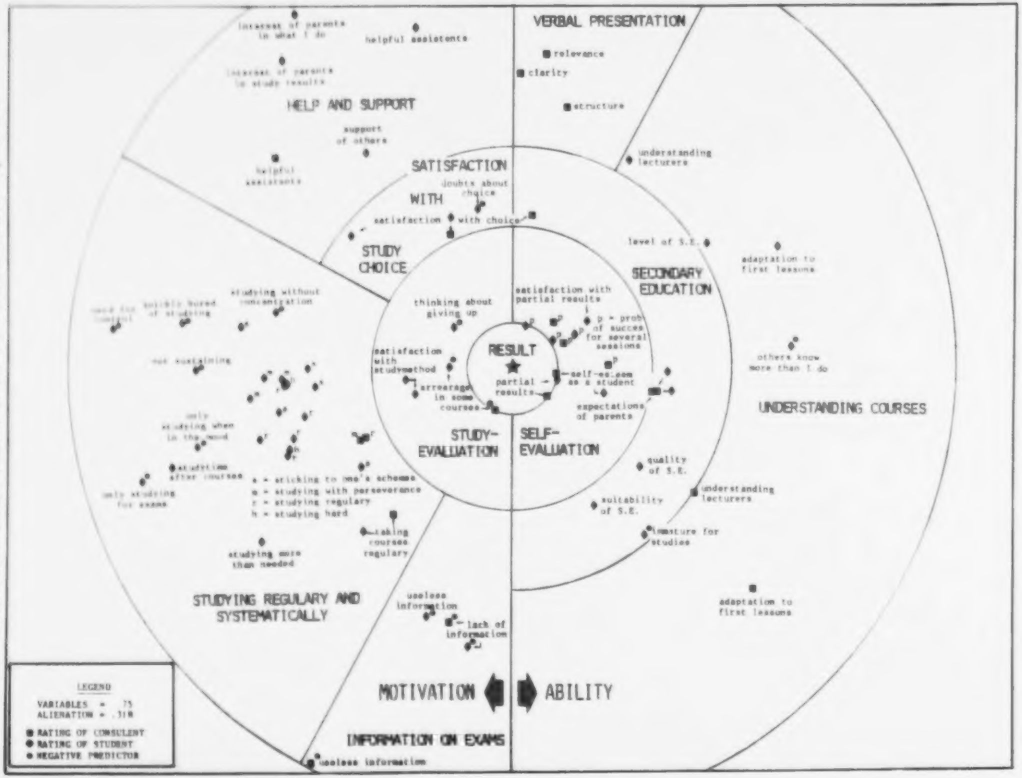
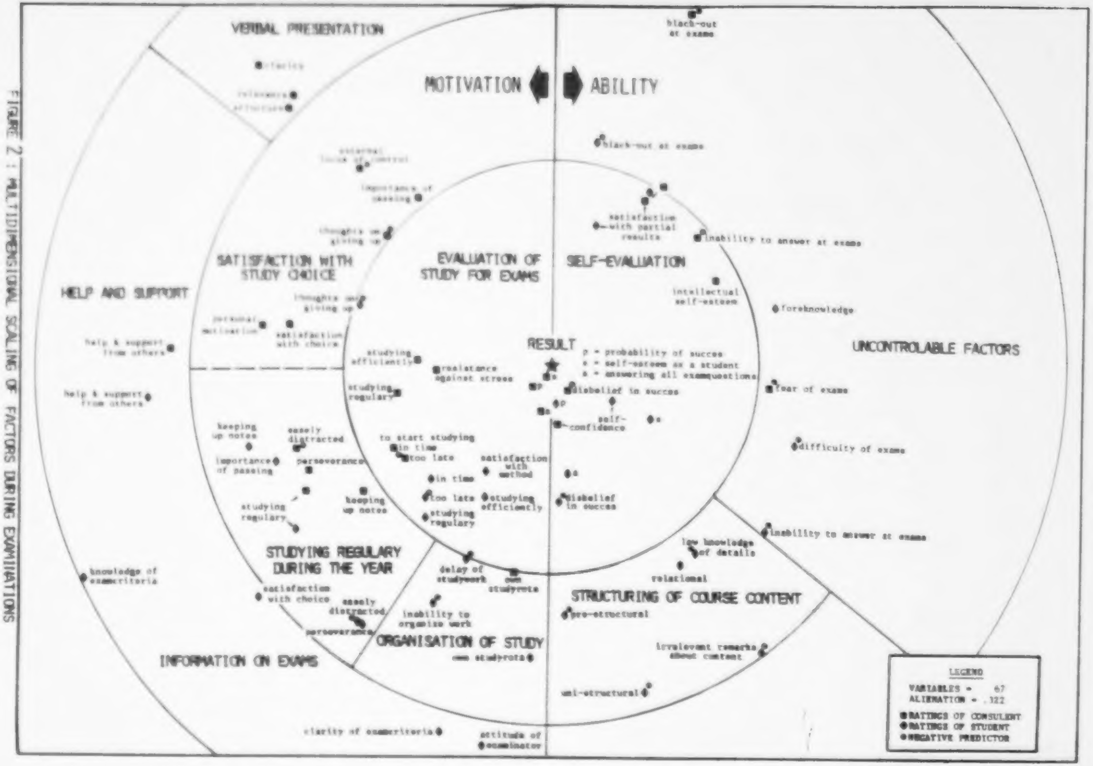


FIGURE 1: MULTIDIMENSIONAL SCALING OF FACTORS BEFORE EXAMINATIONS



VERBAL PRESENTATION
criteria
relevance
structure
MOTIVATION
ABILITY
black-out at exams
black-out at exams
external locus of control
importance of passing
thoughts on giving up
satisfaction with partial results
inability to answer at exams
SATISFACTION WITH STUDY CHOICE
EVALUATION OF STUDY FOR EXAMS
SELF-EVALUATION
HELP AND SUPPORT
thoughts on giving up
intellectual self-esteem
foreknowledge
personal motivation
satisfaction with choice
help & support from others
RESULT
p = probability of succes
e = self-esteem as a student
a = answering all examquestions
UNCONTROLABLE FACTORS
studying efficiently
resistance against stress
studying regulary
disbelief in succes
fear of exams
help & support from others
p
a
e
p
a
self-confidence
e
keeping up notes
easely distracted
to start studying in time
too late
difficulty of exams
importance of passing
perseverance
satisfaction with method
in time
a
too late
studying efficiently
disbelief in succes
studying regulary
keeping up notes
studying regulary
inability to answer at exams
low knowledge of details
STUDYING REGULARY DURING THE YEAR
delay of studywork
own studyrota
relational
knowledge of examcriteria
satisfaction with choice
easely distracted
STRUCTURING OF COURSE CONTENT
inability to organize work
pre-structural
perseverance
ORGANISATION OF STUDY
irrelevant remarks about content
INFORMATION ON EXAMS
own studyrota
uni-structural
clarity of examcriteria
attitude of examinator
LEGEND
VARIABLES = 67
ALIENATION = .122
RATINGS OF CONSULENT
RATINGS OF STUDENT
NEGATIVE PREDICTOR

FIGURE 2 : MULTIDIMENSIONAL SCALING OF FACTORS DURING EXAMINATIONS

lable factors; the right side which I called ability, consists of uncontrolable factors. I did not find a clear division of stable vs. unstable factors in the configurations. Perhaps this can be explained by the Wong & Weiner (1981) finding that locus and controlability dimensions are most prevalent in spontaneous attribution search. A radex with this new structure is summerized in table 2. This structure was confirmed by the Lingoes-Borg guider (proportion < .07) and by the Hubert-Golledge heuristic (p > .05).

Table 2 : Radex-structure of our data according to Weiner's controlability and locus dimensions

	CONTROLABLE (left)	UNCONTROLABLE (right)
EVALUATION central circle	evaluation of studymethod evaluation of studyprogress	partial results self-esteem as a student expected results
INTERNAL LOCUS medial circle	studying regulary taking courses regulary satisfaction with studychoice organisation of study	foreknowledge understanding courses cognitive structuring of content verbal presentation fear of examinations
EXTERNAL LOCUS peripheral circle	help and support of others information on examinations attitude of examinator	difficulty of examinations black-out at examinations

The reinterpretation of our data shows that subjective attributions of causes of succes and failure are generally in accordance with the empirical correlations between the descriptions of study and the final results. Weiner (1983) points out that the locus and controlability dimensions are often in disguise, much like Rotters' locus-of-control concept. Our research supports Weiner's distinction between these two dimensions, and Weiner's comment also explains why the locus-of-control variable in figure 2 is in such an unclear position.

Our research also confirms Weiner's conception that the more internal the cause, the larger the effect on the self-evaluation as a student is. This is because internal factors are situated closer to the central evaluation items than the external factors. Controlable and uncontrolable factors seem to compensate each other (performance = motivation x ability cf. Anderson & Butzin 1974, Kun & Weiner 1973). Moreover, controlable factors do seem to be somewhat closer to the evaluation of study while uncontrolable factors are somewhat closer to self-evaluation and probability of succes. Our research also shows a conceptual difference between, on the one hand self-esteem and probability of succes and on the other hand evaluation of study method and study progress.

The conceptual difference between study- and self-evaluation also runs parallel with two different research approaches. The research on attribution of achievement behavior (cf. Weiner 1979) centers itself on the effect of locus and stability on self-esteem and subjective probability of succes; the learned helplessness research (cf. Seligman 1975) on the other hand focuses on the effect of controlability on perseverance and dropping out. As both research approaches stress different causal dimensions concerning achievement behavior, the hypothesis that study- and self-evaluation might differ fundamentally, remains unproved. Even if this were proved, it remains unclear how both concepts relate to one another.

The second part of my argumentation concerns the effect of subjective evaluations on student achievement. Earlier expectancy-value motivation theories within the framework of achievement behavior (e.g. Atkinson 1978) speak on the assumption that the probability of succes, together with the attraction of the goal, are essential in human motivation. As far as I know, little research, within the attribution theory framework, has been done on the effect of study- and self-evaluation on study achievement. However, Wong & Weiner (1981) content that "The significance of information on the locus and controlability cause(s) is quite apparent, inasmuch as coping actions are very dependant on such information" (p. 662). But the specific effects of this information on study progress, perseverence and output have not been studied.

Although a regression analysis depicts the evaluation items as the most important, it also shows that other items also reach high weights. I presume, in concurrence with Wong & Weiner (1981), that results of study are not solely determined by study motivation, as a summary of feelings and experiences; but by specific attribution effects on study behavior and strategies also. It is, however, clear that strategies and achievement are not only dependant upon the ascribed causes, but also upon the future possibilities of study. According to the perceived circumstances of study in the future, a student is forced to look for short- or long-term solutions (stability), on which he or others (locus) can exercise influence (controlability). An example : When attributing the failure of an exam to bad preparations during the session, a student can resolve to attend and study for the course regulary in the future. However if the next exam is due in a couple of weeks, a short-term solution, e.g. special help from others, becomes a necessity.

6. References

ANDERSON, N.H. & BUTZIN, C.A. (1974) Performance = motivation x ability : an integration - theoretical analysis. J. of Personality and Social Psychology, 30, 598-604.

ATKINSON, J.W. (1978) Personality, motivation and achievement. Washington.

BORG, I. & LINGOES, J.C. (1980) A model and algorithm for multidimensional scaling with external restrictions on the distances. Psychometrika, 45, 25-30.

ELIG, T.W. & FRIEZE, I.H. (1979) Measuring causal attributions for succes and failure. J. of Personality and Social Psychology, 37, 621-634.

FRIEZE, I.H. (1976) The role of information processing in making causal attributions for succes and failure. in : CARROLL, J.S.; PAYNE, J.W. (eds.) Cognition and social behavior. John Wiley, New York.

GREGORY, W.L.; CHARTIER, G.M. & WRIGHT, R.H. (1979) Learned helplessness and learned effectiveness : Effects of explicit responce cues on individuals differing in personal control expectancies. J. of Personality and Social Psychology, 37, 1982-1992.

HUBERT, L.J. & GOLLEDGE, R.G. (1981) A Heuristic method for the comparison of related structures. J. of mathematical Psychology, 23, 214-226.

KELLEY, H.H. (1973) The proces of causal attribution. American Psychologist, 28, 107-128.

KUN, A. & WEINER, B. (1973) Necessary versus sufficient causal schemata for succes and failure. J. of research in personality, 7, 197-207.

LINGOES, J.C. (1973) The Guttman-Lingoes nonmetric program series. Mathesis Press, Ann Arbor, Michigan.

LINGOES, J.C. & BORG, I (1983) A mathematical decision model for the Lingoes-Borg criteria in testing the equivalence hypothesis. University of Michigan, Computer Centre, Technical report, 1, 1-20.

MEYER, J.P. (1980) Causal attributions for succes and failure : a multivariate investigation of dimensionality, formation and consequences. J. of Personality and Social Psychology, 38, 704-718.

SELIGMAN, M. (1975) Helplessness. On depression, development and death. Freeman & Co., San Fransisco.

STEPHAN, W.G.; BERNSTEIN, W.M.; STEPHAN, C. & DAVIS, M. (1979) Attributions for achievement : egotism vs. expectancy confirmation. Social Psychology Quartely, 42, 5-17.

VAN OVERWALLE, F. (1982) Predicting student-achievement at university. Proceedings of the 8th international conference on Improving University Teaching, Berlin.

VAN OVERWALLE, F. (1983a) Social and affective factors of succes and failure at university. Proceedings of the 9th international conference on Improving University Teaching, Dublin.

VAN OVERWALLE, F. (1983b) Motivation, self-esteem and achievement at universty. Proceedings of the 9th international conference on Improving University Teaching, Dublin.

VAN OVERWALLE, F. (1984) An application of multidimensional scaling on prediction : the radex-structure. in : DE GREEF, E. & VAN BUGGENHAUT, J. (eds.) New trends in mathematical Psychology. North-Holland.

WEINER, B. (1974) Achievement motivation and Attribution Theory. General Learning Press, New York.

WEINER, B. (1979) A theory of motivation for some classroom experiences. J. of educational Psychology, 71, 3-25.

WEINER, B. (1983) Some methodological pitfalls in attributional research. J. of educ. Psychology, 4, 530-543.

WEINER, B.; RUSSELL, D. & LERMAN, D. (1978) Affective consquences of causal ascriptions. in : HARVEY, J.H.; ICKES, W. & KIDD, R.F. (eds.) New directions in attribution research. Vol 2. Lawrence Erlbaum associates, New Jersey.

WEINER, B.; RUSSELL, D. & LERMAN, D. (1979) The cognition-emotion process in achievement-related contexts. J. of personality and Social Psychology, 37, 1211-1220.

WONG, P.T.P. & WEINER, B. (1981) When people ask "why" questions, and the heuristics of attributional search. J. of Personality and Social Psychology, 40, 650-663.

THE IMPACT OF TECHNOLOGY ON HIGHER EDUCATION

WEDNESDAY, 4 JULY

1400 - 1530

TECHNOLOGY AND EDUCATION: WHAT CAN WE MAKE OF THEM?

Stephen C. Ehrmann
The Fund for the Improvement of Postsecondary Education

Technology seems to be on its way to changing what we learn as well as how we learn.

The Fund for the Improvement of Postsecondary Education receives more than 2000 preliminary proposals each year. Our application guidelines simply state that we are looking for the most significant, feasible ideas that people have for improving education beyond high school. Over the last three years about 30% of our applicants have proposed to make use of computers, television and other educational technologies. The Fund has been able to support only about one out of every forty of these proposals. The result: a select group of about forty current projects that use technology to make significant improvements in education.

The Fund makes grants by comparing each proposal to all others, not by any master plan. I recently studied our current projects in educational technology to see whether there are any patterns. What kinds of educational gains are promised by these budding efforts? What issues of implementation need to be dealt with before benefits can be realized on a national scale?

THE NEW LEARNING

Let us talk first about the changes in learning. I want to skip over self-pacing, alternative media, and other arguments you have no doubt heard before and instead briefly discuss four themes that may be more new to you.

College Learning: Work Learning

First, many of these projects seem to bridge the traditional gap between college brand learning and the kinds of learning normally practiced in the postcollege work world. In particular, many of our newest grants take tools developed for professional use and turn them, often without modification, to educational purposes.

Projects at the University of Minnesota and Drexel University use word processing and other computer-based writing tools to make it easier for students to learn the process of composition and rewriting. A second example: Harold Cochrane, on the economics faculty of Colorado State University, is using Visicalc and other computer-based spread sheets to enable his students to act out simulations of the economy, simulations designed to teach insight into concepts such as inflation, unemployment, and money supply.

In some projects, students learn as the professional does, through the application of professional tools to real problems. Faculty and interdisciplinary graduate student teams at Southern Illinois University are converting research tools in geography into simpler forms so that undergraduates can use them in class exercises and projects. In another project, the Mathematics Association of America is developing modules in applied mathematics; mathematicians from industry, on videotape, pose complex, real problems for math students to solve;on a second tape the mathematician describes her own solution to the problem. In a different project, at the University of Illinois, a faculty team is developing a "hypertext" in pathology that will be both a text for medical students and a working reference for practicing pathologists. A hypertext, by the way, is a network of cross-referenced pieces of text, illustrations, and mini-tests; other materials can be added during the course by faculty and by students. Some of this material relates to diseases,some to symptoms, some to organs, some to physiology and so on. Faculty can create different collections of material for different groups of students in the class, and different systems of pathways through the material, too. The material is to be commented upon and updated regularly, making the hypertext about four years more up to date than the average new textbook. Pathologists around the country can use this hypertext resource for professional reference and for continuing education. So this tool is simultaneously for education and professional practice.

In the past faculty and students have had to rely on words and symbols to represent and encapsulate knowledge, and have therefore failed to capture some of the essential substance and excitement of learning. The new technologies are apparently opening possibilities for better learning, through doing. And, as I will argue later in this essay, there are also economic forces that are offering incentives to make college learning more like work learning.

Learning the Fundamentals of a Field

Projects like Colorado State's economics simulation are using technology to help students more deeply understand some of the most central ideas in that discipline. How is this kind of learning different from the traditional teaching?

Lectures and texts, even movies, are essentially linear and unchanging. But ideas are dynamic. The learning of an idea can be improved if the student interacts with the idea.

Alfred Bork, at the University of California at Irvine, has been leading the development of a new generation of physics materials. Previous research had documented the difficulty many students have in really understanding fundamental concepts such as "acceleration" and "force". The student may learn about to manipulate a formula without coming to any deep understanding of the underlying concepts. Bork's computer simulations enable the students to play with these ideas, and thereby learn them. The student writes the equations of motion for a rocket to be fired at an orbiting moon, and then quickly sees whether the rocket hits the target. Through quick cycles of try-think-try, the student can develop both an intuitive and a conceptual understanding of force, mass, and acceleration.

Television has played a role in an analogous project at the University of Minnesota Law School. Weekly simulated trials help students develop skill for the courtroom. Lawyers and law schools have always put the image of the trial attorney high on their totem pole. But law schools, lacking a cheap and convenient way to assess trial skill, have rarely devoted much time to teaching it. In the Minnesota project, a class of second year law students each week creates a trial scene, with briefing materials for the the roles of prosecutor and defense attorney, judge and witness. Teams of first year year students take turns playing out these trials before the television cameras, and then evaluate the lawyers' skills, using evaluation criteria created by the second year students.

In such projects technology plays at least one of two roles: it depicts the dynamics of a complex idea or skill, in action, and it enables the student to play with that idea or skill: to learn about it by using it, reflecting on the result, and trying again. Sometimes technology makes "trying" cheaper, easier, or more realistic. Sometimes it provides a tool for analysis and reflection about the results of the "try".

Tools of Creation

We are what we do, someone once said. If computers enable us to do new things, presumably we ourselves are changed: our skills, our notions of what is possible and normal, the way we conceive our world.

Diane Balestri has brought this possibility down to earth at Bryn Mawr. She teaches a composition course to students who are simultaneously registered for a course in computer programming. By taking advantage of the skills and attitudes students gain from programming a computer, she can help them write to enlighten and influence an audience. She draws on their skills in "debugging" and "structured programming", for example, as well as on the deeper insight that composing in a computer Language and composing in English are activities with a purpose and an aesthetic. By helping her students see the parallels (and the differences), Balestri is helping them become conscious of a change in their conception of communication, a change that began when they learned to program.

I can suggest another dimension in which the computer may be changing our creative abilities and perceptions, if you will allow me to wave my arms a bit. I was talking several months ago to Wayne Slawson, a professor of music at the University of Pittsburgh. He teaches an "introduction to music" course, not via listening or performance but through composition. Slawson felt that, by learning as composers do, students were seeing music as a set of interconnected processes. A note is a process, and so is a movement and so are the ways we hear different voices interact. Slawson felt that students were learning to perceive music this way because of the way they created it. His language rang a bell (if you'll forgive the expression). It reminded me of Seymour Papert's book Mindstorms. Papert uses much the same ideas in describing how elementary school children learn powerful new skills for thinking and creative work when they play in the artificial world of Turtletalk. And I also remembered Professor Andries van Dam, who seemed to be talking about similar abilities and perceptions when he told me several months ago about students in an experimental programming course at Brown University. They are using an algorithm simulator that can represent phenomena in the machine with several kinds of mathematical and graphical images. The simulator is both a teaching tool for faculty and a design tool for students.

So there seems something suggestively parallel in the anecdotes of Slawson, Papert and van Dam. In each case students learn to perceive in terms of interacting processes, and use those percepts as creative tools. If so, the new information technology may enable us to add a dimension to the liberal arts.

"Forward to Fundamentals"

I have been using words like "basic" and "fundamental" over and over again, and that is no accident.

First, of course, the Fund selected projects that deal with learning of fundamental importance because they were more attractive proposals than the many that treated only specialized concerns. Creating new educational applications to technology is usually expensive and time consuming, so we focus on those proposals that have the greatest potential benefit for the most students. Thus these projects work on learning fundamental to their disciplines.

But I think that the age of the computer will bring about a new and different incarnation of "back to basics", one that has nothing directly to do with hardware or software. And the energy for this "forward to fundamentals" movement would come from employers.

In education, we have to rethink what we know about our subject matter and about our students if we want to get big educational gains from the application of technology. Businesses and their employees face the same challenge.

Businesses and professions also need to rethink their "subjects", if they are to use technology in order to become more productive. People will need to rethink the fundamentals of their activities in the light of what technology can enable. This has been true in engineering for decades; ever since the advent of the computer, engineers have had to continually rethink the routines of their trade in order to take maximum advantage of growing computer power. Usually that reconceptualizing has been done by people with an unusual understanding of the underlying natural science, and, more recently, of economics and social sciences. The same is true in other professions, and in other forms of organization. So, if a business or profession is to take advantage of information power, its people, most of whom graduated some time ago, will need to learn more deeply and fully the fundamentals of their own trades.

And think about the challenges of reforming a business or profession. When an organization implements a new computer system, people from "top" to "bottom" must be involved; we've known that for a while. Now add to that principle of involvement this new assertion that people involved with the design of new applications of information technology also need to have a deep theoretical insight into the nature of the activity that is to be "computerized".

I would conclude that not only the technologists, and not only the top managers,but also the workers on the floor and the secretaries should learn the nature of their business in a fundamentally different way. It takes takes one set of skills and values to carry out routines designed by others (whether you work on the first floor or the penthouse suite). It takes a different kind of learning to rethink what those routines should be, or even to anticipate problems when someone else proposes a change in what you do. (One of the first responses to this trend that the Fund has seen comes from a labor union: District 1199 of the National Union of Hospital and Health Care Employees is working to help all their members learn about the dynamics of the health care industry, an industry marked by rapid technical change.)

In the previous section, I argued that technology can enable students to learn much more deeply and effectively about some of the most central ideas of a college education. That's fortunate because if we are to improve our productivity and the quality of our lives, people will need to understand their work and their lives in a fundamentally new and more creative way.

ISSUES OF INSTITUTIONAL CHANGE

It will not be easy. Fund projects have also raised important questions about the nature of institutional change necessary if we are to fully take advantage of these new instructional powers. More or less arbitrarily I have selected three of the more troubling questions for discussion.

Who Can Afford It?

The postsecondary market scarcely seems big enough to pay for the development of high quality educational software. And of course, the real size of the market is much smaller than the number of learners. Riddle: If one faculty member teaches 300 students each year in a course, and teaches the course five years, how many copies can you sell him of the computer-based course that you spent $400,000 to develop? Answer: Maybe only one, if the faculty member (illegally but easily) makes large numbers of copies for students, or lets them tap his copy through a network.

The situation is not that bad, but almost so. Unless the computer material is made an inseparable adjunct of a saleable textbook or uncopiable videodisc, the market for a floppy disc is often closer in size to the number of faculty than to the flow of students. And that market will often not be large enough to pay the costs of publication and maintenance, let alone development of a new generation of materials. So although software in instruction is desperately needed and highly successful, how do we pay for it?

A partial answer comes from the family of projects described earlier: the application of computer-based tools developed for business/home markets. Spread sheets and word processors, for example, are cheap, powerful and will run on virtually any microcomputer. Each student would buy her own, and her own machine. Compatibility of hardware and software would not be an issue. When tools become cheap enough, a whole sequence of instructional inventions becomes possible.

Another way to make a market is to develop an educational tool flexible enough yet cheap enough to be sold both to schools and colleges. With a $62,000 Fund grant Daniel Fivel at the University of Maryland is developing an optics simulation laboratory that should be instructionally useful at levels from junior high school to graduate school. That is a large market.

Even if such approaches lower the cost of software, even if students buy their own machines or terminals, I suspect that universities are still looking at substantial increases in their operating costs.

It may not be possible to justify such increases, even if major gains in educational benefits are achieved. In education it seems that prices are set more by what people can afford than by what they receive. If so, institutions may face a choice: artificially limit their use of educational technology, or redefine their central services and markets so that their whole pattern of expenses and incomes are changed and brought into balance.

Sharing and Gift-Giving

But the market metaphor is not sufficient to describe what can and does happen in the information world. Just as colleges somehow exist while both buying some resources and receiving others as gifts, and while selling some services while giving others away, so too the world of information technology is both buying-selling and sharing.

For example, a large number of Fund projects have explored consortial arrangements for making use of telecommunications technologies in education The Communications Consortium in Boston is helping colleges and cultural organizations who are potentially competing in the same markets to also share equipment and ideas. The University of Minnesota at Morris leads a complementary rural development effort. The State of New Mexico is looking at collaborative statewide planning, while the International University Consortium on Telecommunications in Teaching is evaluating a collaborative approach to telecourse design. Multi-college faculty teams in New Jersey are developing shared approaches to evaluating and using televison-based material developed elsewhere. A new grant to the Gutman Library will enable the publication (and online availability) of a directory of serious applications of technology at schools and colleges across the country; people who are seeking help or collaborators will be able to do an indexed search of some twenty thousand points of reference and assistance. (There are many non-FIPSE examples of this phenomenon, of course, such as the large amount of high quality, public domain software written for the CP/M operating system.)

How can we reconcile the conflicting ethics of buying-selling (in which giving the product away or copying it is a sin) and sharing (in which taking something you have been given, packaging it, and selling it is a sin)? Sharing and buying-selling exist in an uneasy relationship. But so long as copying is the essence of computing and so long as educational markets remain relatively small, educators will face a challenge: how to develop courseware in ways that are educationally effective, economically feasible, and ethically compatible with the ideas that the faculty profess to students.

A first step toward providing such answers might be made by studying some information technology communities where gift exchange and sharing are dominant ethics; CP/M software, for example, or some of these collaborative projects. Are these communities of shared interest stable? Does such sharing nurture creative applications of technology? When, and how, should this kind of anarchistic sharing of courseware and ideas be encouraged? Where, on the other hand, is it appropriate to use market mechanisms to stimulate the use of technology?

What is a Professor to Do?

Will faculty make these investments and take these risks to reshape the way their students learn? Maybe not...

Most faculty members join their profession because it allows them to profess -- to have the freedom to say what they most want to say to an audience of students more or less under their control. Such a person is indeed a professor, a person whose prime point of reference is his field. (A "teacher", in contrast, has the student as an additional point of reference.)

A good professor alters his teaching when his discipline changes. A good teacher listens to other voices, too, and alters his teaching to fit the characteristics of the student and the world in which the student will work and live.

So is it professors or teachers who will decide the fate of educational technology? My experiences with educational improvement indicate that most faculty are professors. Look at what happened to the Keller Plan. A variety of evaluation studies over the years have indicated that self-paced instruction of this sort is markedly superior to traditional (and many nontraditional) methods of instruction. Yet how many faculty have changed their teaching to use it? How many faculty senates and deans have even considered investing in self-paced instruction at the institutional level?

Even if the need for good education is increased by information technology, and even if information technology offers a way to substantially improve the most important kinds of learning, will college change?

I do have some hope.

First, studies done by researchers at the University of Chicago indicate that the most highly respected faculty are not prisoners behind the podium -- they are in fact pragmatic and learner-centered teachers. These are our leaders.

Second, such leadership will probably be reinforced by the multiple uses of the computer, its accessibility to faculty, and the vociferous demands of students for computers in college. Administrators are also making use of the computer for their own good purposes, which may provide some additional support and understanding for faculty.

Third, new organizations are entering the postsecondary education business, for their employees and for others, and they are already making energetic bids to use technology to deliver cheaper, better education. Traditional colleges may respond effectively to this challenge. Or else,in the future, papers like this one on technology's usefulness for the mass of students will be made to a different audience than the one sitting here today.

The fourth reason for hope is the empirical evidence. Five years ago 5% of the proposals to the Fund dealt with electronic technology. For the last three years in a row that figure has been 30%. The interest is broad. It seems to be lasting.

So we face problems. Solving them may entail rethinking our roles and our institutions. But such change is needed. And there is reason to think that such change is possible.

SCE/1b

A SURVEY OF TELECOMMUNICATION POLICIES AND PRACTICES IN AMERICAN HIGHER EDUCATION

William Clyde Hine
University of Evansville

Introduction

In June, 1972 the Carnegie Commission on Higher Education issued a report entitled "The Fourth Revolution: Instructional Technology in Higher Education." The report began with the following statement:

"Higher education is on the brink of the first great technological revolution in five centuries - the revolution of the new electronics." The report went on to explain that the technological revolution would influence both research techniques in many fields and would change the administration of many campuses. Noting that the new technologies affected both libraries and the instructional process itself, the Commission concluded that the technological revolution offered one of the best ways for introducing change in campus academic life.

For the student, the new technologies offer many advantages, the Commission observed that they offer new ways to deliver education to those that are handicapped, sick, incarcerated, aged, and to those that are members of the armed forces or who simply prefer to learn at home. It increases the opportunity for independent study, is considerate of the slow learner, and offers a wider variety of courses. New technological instruction also improves conditions for faculty members by reducing routine responsibilities. The revolution also may reduce the need for teaching assistants and new faculty, according to the Commission's report.[1]

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[1] "A Digest of Report of the Carnegie Commission on Higher Education." McGraw-Hill Publishing Co., New York, 1974, p. 99.

The Commission defined instructional technology as "The enrichment and improvement of the conditions in which human beings learn and teach, achieved through the creative and systematic organizations of resources, physical arrangements, media and methods."[2]

This part of the survey tried to ascertain current telecommunication activity in American continuing higher education and to learn if the great explosion in telecommunications expected for the 1970's had actually occurred. The survey also asked about the location of administrative responsibility and about the use of faculty for telecommunications at the institution. In addition, the survey tried to determine the institution's level of commitment to telecommunications and the future potential. The results of this part of the survey, therefore, should give the reader an indication of the level and type of activity in telecommunications in continuing education at American colleges and universities.

Summary of Responses

Explain briefly the involvement of your continuing education program with telecommunications.

One of the important findings from this questionnaire is that 45% of the respondents quoted no involvement at all. Of those who responded affirmatively, the answers were diverse, although use of cable television and public broadcasting for course work were cited most often. A smaller number of respondents are involved with major educational television networks or consortiums in their state, and one university stated that they have a "closed-circuit television network broadcasting to twenty-two businesses, industries, and to two other educational institutions." Some of the respondents explained that their university has its own television station and is providing educational programming over that station.

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[2] Ibid., p. 108.

Do you offer continuing education courses by means of television? If yes, public or cable?

Again, the majority of respondents (61%) said that they do not offer continuing education courses by television. Of those who answered "yes," 76% said they are using public television, and 24% said they are using cable television.

Do these courses count for degree credit?

Of the respondents' answers to this question, 87% said that they do count the television courses for credit while 13% said they do not.

Who has primary responsibility for telecommunications at your institution?

The responses to this question varied. The positions of dean or director of continuing education and vice president or dean of academic affairs were represented in the majority and in equal proportion. A smaller number of respondents identified positions in the academic or communications department that directed this type of programming. A number of other offices were mentioned but without any consistency.

Do you use full-time or part-time instructors to teach continuing education television courses?

Sixty-one percent of the responding institutions use both full- and part-time faculty. Thirty-five percent replied that they use full-time faculty members only, and 4% use part-time only.

Do regular day faculty members receive additional remuneration for teaching television courses?

Seventy-two percent responded "yes" and 28% responded "no." Some respondents explained that their institutions pay faculty members only if the television course is taught on an "overload." Others mentioned that their universities are making an effort to incorporate this activity into the faculty member's regular teaching load, but this practice is relatively rare.

Is the regular day teaching load reduced for teaching television courses?

Of those who responded, 69% answered "no," and 31% answered "yes."

Who handles registration for your continuing education television courses?

Seventy-four percent of the respondents said that the director or dean of continuing education handles the registrations. The registrar's office and/or some other administrative office register students at 26% of the responding institutions.

How are your continuing education television courses financed?

An overwhelming 88% said the courses must be self-sufficient through tuition or other types of financial support. Of the remaining 12%, some type of state, federal, and/or other outside funding provides support for these courses.

To what degree are you purchasing software developed by other organizations?

Eighty percent of the institutions replied that they are purchasing no software at this time. Eighteen percent responded that they are purchasing a little software at this time, while only 2% said they are involved in major purchasing of software.

Are you participating in any of the following: American Educational Network, National University Consortium, ETV 3, other?

Of those that responded to this question, 43% checked "other," and added that they use a local or state television network. Of the three organizations mentioned, 35% said they use ETV 3, 17% use the National University Consortium, and 5% use the American Educational Network.

Is there institutional commitment to the field of telecommunications?

Sixty-one percent of the respondents said that their institutions are partially committed to the field of telecommunications. They went on to say that, although the institution provides budgetary, technical, and production support, there is a lack of faculty interest and support. One respondent said that the "university has a telecommunications system, but provides a small amount of funding," and her comment reflected the situation of many others. A number of others cited a growing interest in telecommunications but a lack of coordinated focus. Of the remaining institutions, 26% said that their institutions provide full commitment to telecommunications while 13% replied that no institutional commitment exists.

What applications do you see to the field of telecommunications for educators in continuing higher education?

The replies to this question were enthusiastic. Respondents mentioned the areas of noncredit programming, credit courses, teleconferencing, and interviewing. Others pointed to the possibilities of providing educational programs to remote geopgraphical areas currently without such opportunities. Telecommunications can also assist institutions to "borrow" a faculty member to teach a discipline for which they have no faculty members of their own.

In answering this question, a number of respondents restated some of the problems suggested in the previous question. They complained that institutions by and large still allocate few real dollars for this type of programming or that the faculty is either neutral or negative about this type of activity.

Additional comments on telecommunications.

Many respondents believe that telecommunications will have great impact on the future of American higher education. Because of budgetary and other restraints, however, this impact will be felt more slowly than many would have predicted five years ago. Many also believe that the area of telecommunications will be one of major growth in higher education and that higher education underrates the potential of telecommunications for both credit and noncredit curricula.

Summary

Results of the survey reveal that the "Fourth Revolution" outlined by the Carnegie Commission has not arrived. Because of low faculty interest, limited budgets, and other priorities, little of the potential of telecommunications has been realized. The responses to the survey pointed out, however, that many still believe that telecommunications will eventually have a major impact.

Institutions need to assign responsibility for development of telecommunications projects. The old adage, "everybody's business is nobody's business," has been demonstrated graphically in the area of telecommunications development. Institutions also must develop faculty support for telecommunications and provide greater financial commitment before the area's full potential will be realized.

THE USE OF LOW COST TECHNOLOGY IN A DECENTRALISED STRUCTURE FOR PROFESSIONAL DEVELOPMENT

John A McAleer

Ulster Polytechnic

This paper sets out to examine an approach to distance learning using conference telephone facilities. The paper is based on a small scale research project conducted in the context of an ongoing professional development course for practicing teachers. Some conclusion of the experiment were reported in 1980[1]. The present paper seeks to extend that first analysis and to identify some new implications for departmental survival and course design in a decentralised structure of course provision.

The course team associated with the programme were seeking ways of maintaining and expanding opportunities for students remote from the institution's main campus. Currently our department operates seven centres ranging from 20 to 100 miles distance from the main campus. In all we have approximately 280 students enrolled through this out-centre provision. The study was undertaken at Enniskillen which is 100 miles from the main compus at Belfast.

The course of study leading to the award of BEd degree was designed to meet the needs of groups of students and we were not concerned to develop individualised packages of study to be taken in isolation. The maintenance of group work was therefore a primary concern. The central core of group study is student interaction. While a variety of distance-learning approaches can be adopted to knowledge dissemination and can be used to substitute for face-to-face lecturing there is no substitute for group interaction. Our study therefore focused on maintenance of seminar work at a distance.

The Investigation

Our investigation posed the question as to what might happen if the tutor joined in seminar discussions using a long distance telephone link. At this point in time the investigations had one rather mundane idea in mind - that if telephone contact was effective the tutor would be saved five hours travel and the institution 200 miles of travel costs. On everything else we hoped to keep an open mind preferring to discover any interesting developments that might arise. But, what we would like to point out here is that this was a low cost experiment conducted by ourselves in an attempt to investigate an ongoing teaching problem with a view to improving the quality of student learning in a context made difficult by distance.

The equipment we used consisted of a conference telephone in a tutor's room and another in a seminar room at the out-centre in Enniskillen. No special furnishings were used at either place that could have contributed to an improvement in the quality of transmission. A Grundig dictaphone was used at the out-centre to record all seminar discussions.

In six consecutive sessions the procedure we adopted for each of the two tutors was to have recorded on tape:

Context (i)	a seminar with the tutor present and participating in discussion with the students;
Context (ii)	a seminar with the participating tutor connected by long distance telephone link to the conference telephone at the out-centre, and at the Polytechnic;
Context (iii)	a seminar with the tutor absent from discussion.

After each session the tape recordings were transcribed and at the end of the six sessions the students were asked to make written comments. We hoped that the transcripts and comments on the three different seminar modes along with our own impressions would yield some insight into the conduct of seminars.

Findings

We did not attempt any statistical analysis of seminar content but rather used the methodology of qualitative analysis associated with illuminative evaluation. This analysis is reported elsewhere (see Note 1). In summary we made the following conclusions on seminar work.

Context (1) The transcripts of the first seminar mode with the tutor present with his group of students makes useful study for it provides evidence of a typical example of seminar discussion. It is clear that while both tutors initially held back from discussion, as it progressed both tended to sum-up and direct the discussion. It may be because the issues chosen by the students were about language and meaning - the meaning of 'education' and the meaning of 'children's needs' - and that the students found such topics particularly puzzling that the tutors began to structure the discussion both by asking pertinent questions and summing-up points made.

Typical of Tutor 1 were frequent pointed questions concerning the meanings that words are given in their use:

"Do you think different groups of people put different meanings on some words?"

Context (ii) In contrast to the first two seminars where the tutors were physically present transcripts of the next pair conducted by long-distance telephone link yield a new and striking dimension to the discussions.

On both occasions telephone reception was poor. Two factors contributed to the indifferent quality of transmission. First, both rooms containing the telephone lacked the furnishings that would have reduced echoes and background noise; and second, with 14 students in a seminar group it was impossible for each speaker to talk directly towards the microphone at arms length from it as recommended by the Post Office. Given these unsatisfactory conditions it was inevitable that a tutor, losing contact, would occasionally interrupt discussion at the out-centre asking for a remark to be repeated.

In spite of these technical difficulties - difficulties that, with a change of physical conditions, could be minimised - the transcripts reveal a new dimension in the seminar discussions. It appears that students were aware of the lack of intimate contact with their tutor, for seemingly out of the blue in the course of discussion a student would ask:

"Are you still there Peter?" or
"Did you hear that John?"

However, this concern led to what can only be described as an added confidence in themselves. Where in the first seminar mode we as tutors were prone to direct discussion, our physical absence was enough to force the students to pursue their own line of argument. Now they asked pertinent questions. Detailed analysis of the transcripts reveal much greater awareness on the part of students of their responsibilities for clarification and analysis of problem issues.

Context (iii) The transcripts of the final pair of seminars where the students conducted business entirely by themselves show them to be satisfactory. Two interesting points do arise, though: Perhaps due to the fact that these two seminars were being tape recorded the students were prompted to take the task seriously making efforts to structure the dialogue and learn from each other.

The other point came out later when we read the student appraisals of the three seminar modes. They were virtually unanimous in their concern for the occasional reassurance and guidance a tutor can give which, in his absence, is lacking.

In reflecting on this mode of seminar discussion we are of the opinion that while both unsupervised seminars were effective the business of monitoring them, (by listening later to the tape recording) in order to provide critical comments on the student dialogue, would be seriously affected by the time lag. By this mode students cannot be immediately provided with the tutor's views nor can they make a critical appraisal of his views. This omission of a two-way appraisal is serious, for in the context of our course in Issues in Education the dialogical approach, in essence, requires the tutor to be an equal participant with the students in developing critical analysis.

Conclusion

Our first analysis centred on the issues of, technical problems and the impact on student dialogue. We now think that the experiment has implications in three further areas which we now wish to identify.

1 Implications for Course Design in the Area of Professional Development. The design of such courses should be predicted on user needs rather than on some a priori conception of content. By adopting a needs-based approach both the boundaries of content and institutional location are altered. Expression of need does not per se contain the identification or location of provider. The way is therefore open to a variety of approaches to need fulfilment. A higher education institution can devise courses which do not confine the response to need to main campus location. Course design and teaching strategies in the context of professional development should therefore take account of the fact that need is not located in parallel with institutional location. Distance teaching techniques should be evaluated at the same time as course design in response to professional need. Such an approach will give an institution or a department within an institution a competitive edge over its rivals. Our own experience with seminar work using the conference telephone shows that if students are properly prepared for the experience there are positive advantages to this form of learning.

2 Implications of Distance-Learning Techniques for Departmental Survival. Our own institution is moving to a concept of departments as cost centres based on a staff-student ratio of 1:10. At present expenses entailed in off campus teaching are met over and above department funding. This is done because the institution recognises its social responsibility to sections of the community which lie outside the possible commuting distance for part-time courses. We can not take it for granted that this will always be the case. Low cost distance-learning techniques which enable a department to extend its environment, not only create new opportunities for students, but also underpin departmental survival.

3 Staff Development

Extension of institutional environment need not lead to diminution of quality in teaching as our experiment shows. What is needed is that groups of staff identify more clearly the goals of their various teaching strategies. There is to date sufficient knowledge about the application of new technology to teaching/learning situations but much of it is still regarded by too many practitioners as in an experimental state. The challenge of decentralized provision in a cost conscious environment can make staff more willing to utilize and develop existing technology.

For too long many higher education institutions have regarded their knowledge as something apart from the society in which they live; they have also regarded their own physical location as all too sacred. Our simple experiment using a low cost communication system lead to a qualitatively better experience for students. It also pointed the way to a wider range of opportunities for study. There is now in existence a range of technology which can provide the basis of opportunity through decentralized provision. The range of modern technology allows higher education institutions to respond to social need in ways which redefine their physical boundaries. It also calls for a re-examination of the kinds of teaching strategies which we employ.

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1 McAleer, J, Whitehouse, P The use of the loudspeaking telephone to conduct seminars at an out-centre, in Educational Change and Development 1980.

USING STUDENT CONCEPTIONS OF LEARNING AND TEACHING

WEDNESDAY, 4 JULY

1400 - 1530

OPTIMIZING THE EFFECTIVENESS OF UNIVERSITY TEACHING BY ACCOMMODATING INDIVIDUAL LEARNING STYLE CHARACTERISTICS

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Learning Styles is a fundamental new tool for teachers and schools; it provides a deep and more profound view of students than previously available and is a basic framework upon which instruction may be built (Keefe, 1982). Experimental research of the past decade demonstrates that, at every level, students taught through instructional material that complements their learning style achieve significantly higher academic and attitudinal scores on standardized tests and evidence reduced numbers of discipline problems (Carbo, 1980; Carruthers and Young, 1980; Douglas, 1979; Lynch, 1981; Tannenbaum, 1982; Urbschat, 1977; Weinberg, 1983; Wheeler, 1983). In each case, both long and short term retention was significantly improved in comparison with each individual's base line data.

Specific elements of learning style have dramatically revealed their ability to significantly affect achievement K-12. The elements of sound, light, temperature, and design have demonstrated their ability to influence achievement at both elementary and secondary levels. They appear to be critical for approximately 10% of the student population.

However, an element that seems to affect virtually half our adolescents is mobility. Della Valle (1984) identified the need for frequent movement versus the need for passivity among seventh graders. Almost half that population required a great deal of activity while studying and concentrating.

Finally, a number of researchers evidenced the extreme importance of teaching people at the time of day at which they were most alert (Biggers, 1980). Not only did students learn more (Virostko, 1983) and like learning better (Brooks, 1981), but attendance was significantly increased by both chronic and initial truants at the high school level (Lynch, 1981). Thus, mounting data continues to reinforce that, regardless of grade level, youngsters apparently benefit dramatically from being taught in environments and through resources that complement their physical and attitudinal needs.

Moving from an understanding of the effectiveness of responding to youngsters' learning styles to that of adults requires little extrapolation. The Domino (1970) and Farr (1970) studies documented that college students were able to identify their own styles and that they too performed significantly better when they were taught and tested through their own personal traits. Those investigations were further corroborated by the research of Banks (1973) and Oen (1973) who studied the interaction of individual styles and types of learning experiences among post-secondary vocational and technical students. Although not experimental in nature, their investigations gave credence to the belief that an individual's style can be identified. Banks maintained that it then was conceiveable that complementary modes of instruction or presentation could be developed to provide the higher education student with an optimum learning experience.

The identification of students' learning styles has been approached in alternative ways and to varying degrees by different researchers. Investigations conducted with post high school populations were reported using an adult learning style instrument, the Productivity Environmental Preference Survey (PEPS)(Dunn, Dunn, and Price, 1979). That instrument analyzes individual adult's personal preferences for each of 18 different elements in the areas of immediate environment, emotionality, sociological needs, and, physical needs. In each of the populations under investigation, undergraduate and graduate students alike indicated how they preferred to function, learn, concentrate, and perform in their educational activities. In each of those correlational studies, it was determined that differences in style existed among adults at various levels of academic involvement.

Faced with changing demographic trends in higher education in the 1980s, as well as diminishing financial resources, the stability of all post-secondary institutions will depend upon their ability to adapt to evolving conditions. Unless colleges and universities become more effective in meeting the needs of a variety of students, their very existence is in question.

One possible approach in optimizing effectiveness is for college and university personnel to familiarize themselves with new learning theories and a variety of learning options. In light of the above research, the attention of higher education must begin to be directed toward the identification and accommodation of students' individual learning characteristics.

In specific terms, this student-centered emphasis can be implemented in two successive phases: (a) the admissions, orientation phase; and, (b) the instructional methodology phase. The following pages will present an overview of each of these phases.

Admissions/Orientation phase. In addition to the normal college board and high school transcript submission process, it is critical that the potential student's learning style preferences be diagnosed in order to determine whether there is a match between the philosophy and resources of the institution and the applicant. For example, a university which emphasized the case study approach would not be appropriate for an individual whose learning style revealed a strong preference for the lecture method. Similarly, an institution offering only a day program of study would not be suitable for a person whose peak learning time was during the early evening hours.

Assuming that the applicant's scholastic apptitude tests, high school record, and learning style diagnosis meet the admissions criteria of the institution, the learning style data collected can then be used to facilitate the orientation process. Cross (1979) stressed the fact that students need to understand themselves as learners, they need to know the learning options available to them and they must understand how to match their learning needs to available resources. By administering and interpreting an instrument such as the Productivity Environmental Preference Survey, the orientation process can become more effective and students will be better equipped to make decisions regarding courses, professors, and schedules. Indeed, if individual students were aware of their unique learning style profiles they could accommodate for themselves accordingly. A student with a high need for quiet while learning would know the advantage of seeking a remote study area in the library, while a person with a strong peer orientation would realize the effectiveness of working with a small group in completing an assigned project. By providing students with the opportunity of identifying their unique learning preferences, institutions would be enabling them to become more knowledgeable consumers of their own education.

Instructional methodology phase. With a view toward accommodating the learning style needs of their students, universities must begin to develop a multiplicity of options in terms of both the courses being offered and the instructional strategies employed within those courses. Based on what we now know about how students learn and retain information, the traditional lecture approach is not appropriate for the low auditory individual. It is therefore incumbent upon university faculty to be as flexible as possible in the presentation of course material. By integrating auditory, visual, tactual and kinesthetic or experiential techniques, professors can improve the effectiveness of their teaching.

This can be taken one step further, however, when students' learning styles are diagnosed and both student and professor become aware of the individual's unique learning preferences. In this instance, the student can begin to accommodate for his own proclivities regardless of the formal class presentation technique. For example, a highly visual student should avail himself of the opportunity of reading the new material before attending a lecture on the topic; a highly auditory student should attend the lecture presentation first, then reinforce by reading; the highly tactual learner should write out some index cards based on a cursory reading of the material before attending the lecture; and, the highly kinesthetic learner should become familiar with the topic experientially by visiting a museum or other related place, before hearing the lecture presentation. Similarly, the follow-up activities each student employs should strive to reinforce the learning through secondary and tertiary modalities. In other words, the strongly visual preferenced learner would read first, then listen and follow-up by either making a set of study cards or visiting an appropriately relevant place. In this case, the professor is presenting the lecture as regularly scheduled for the entire class and the students themselves are accommodating for their preferred perceptual strengths either before or after the lecture.

University teachers should also take into consideration the sociological preferences of their students and provide options within their courses to accommodate accordingly. Not all students learn best from an authority figure; some prefer to learn in a small group situation with their peers; others prefer to learn by themselves; while a number of students require a combination of sociological experiences over the course of a semester - it is the variety that increases teaching effectiveness.

Similarly, professors should be cognizant of the amount of structure required by their students. Some need frequent due dates and submission of drafts before a final project is completed, while other students bristle at those requirements and need only be told the final due date.

Attention to learning style characteristics such as those enumerated above is of paramount importance in schools of education. Prospective teachers should be instructed through their individual learning styles if they are expected to accommodate the diverse styles of the students they are being prepared to teach. If we adhere to the philosophy of meeting the individual needs of children, schools of education must provide preservice teachers with varied instructional approaches, choices of reporting alternatives, and diverse educational environments in order to respond to those learners' individual differences. When preservice teachers' learning style preferences are accommodated, college personnel can anticipate more effective transfer of skills and strategies into the classrooms of tomorrow.

In conclusion, the challenges facing higher education in an increasingly volatile environment demand the implementation of new financial, operational, and educational strategies. Of these three, educational strategies are most closely linked to improving university teaching. It is therefore necessary for college faculty to familiarize themselves with innovative techniques and emerging trends. Among the most notable, is the attention currently being given to the diagnosis and accommodation of students' individual learning styles. Based on a student-centered approach, learning style methodology can be utilized effectively in both the admissions/orientation process and actual classroom instruction. The research to date evidences the effectiveness of accommodating students' learning style preferences and provides a foundation upon which implementation at the college level can be based in attempting to improve the teaching process.

BIBLIOGRAPHY

Banks, J. and Oen, U. An investigation of the interaction of learning styles and types of learning experiences in vocational technical education. Final Report. Menomonie, Wisconsin: University of Wisconsin - Stout, 1973.

Biggers, J. Body rhythms, the school day, and academic achievement. Journal of Experimental Education, 1980, 49, 45-47.

Brooks, A. The inner clock; A new timepiece for learning. Teacher, 1980, 97 (7), 48-50.

Carbo, M.A. An analysis of the relationship between the modality preferences of kindergarteners and selected reading treatments as they affect the learning of a basic sight-word vocabulary. Ed.D. Dissertation, St. John's University, 1980.

Carruthers, S.A. and Young, L.A. Preference of condition concerning time in learning environments of rural versus city eighth grade students. Unpublished manuscript, 1978. Paper presented at the First Annual Conference on Teaching Students Through Their Individual Learning Styles, New York, 1979.

Della Valle, J. An experimental investigation of the relationship(s) between preference for mobility and the word-pair recognition scores of seventh grade students to provide supervisory and administrative guidelines for the organization of effective instructional environments. Ed.D. Dissertation, St. John's University, 1984.

Domino, G. Interactive effects of achievement, orientation and teaching style on academic achievement. ACT Research Report No. 39, 1970, 1-9.

Douglas, C.B. Making biology easier to understand. The American Biology Teacher, 1979, 41, 277-279.

Dunn, R., Dunn, K., and Price, G. Productivity Environmental Preference Survey Manual. Lawrence, Kansas: Price Systems, 1979.

Farr, B.J. Individual differences in learning: Predicting one's more effective learning modality. Ph.D. Dissertation, Catholic University, 1971.

Keefe, J. Student Learning Styles and Brain Behavior. Reston, Virginia: National Assoication of Secondary School Principals, 1982.

Lynch, P.K. An analysis of the relationships among academic achievement, attendance, and the learning style time preferences of eleventh and twelfth grade students identified as initial or chronic truants in a suburban New York school district. Ed.D. Dissertation, St. John's University, 1981.

Tannenbaum, R. K. An investigation of the relationship(s) between selected instructional techniques and identified field dependent and field independent cognitive styles as evidenced among high school students enrolled in studies of nutrition. Ed.D. dissertation, St. John's University,1982.

Urbschat, K. A study of preferred learning modes and their relationship to the amount of recall of CVC trigrams. Unpublished doctoral dissertation, Wayne State University, 1977.

Virostko, J. An analysis of the relationships among academic achievement in mathematics and reading, assigned instructional schedules, and the learning style time preferences of third, fourth, fifth, andsixth grade students. Unpublished doctoral dissertation, St. John's University, 1983.

Weinberg, F. An experimental investigation of the interaction between sensory modality preference and mode of presentation in the instruction of arithmetic concepts to third grade underachievers. Unpublished doctoral dissertation, St. John's University, 1983.

Wheeler, R. An investigation of the degree of academic achievement evidenced when second grade, learning disabled students' perceptual preferences are matched and mismatched with complementary sensory approaches to beginning reading instruction. Unpublished doctoral dissertation, St. John's University, 1983.

LEARNING INTERACTIONS PREFERENCES

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Ronne Jacobs Associates

Literature pertaining to teaching methods often emphasizes that learners are not homogeneous in the ways in which they learn, and that teachers therefore need to pay attention to the unique styles in which their students acquire knowledge and skills. Learning style has been approached from the cognitive point of view (Witkin, 77; Hill, 71; Kolb, 76), with usable information being generated. But there are other learning preferences operating as well, especially those encompassing social interaction. The authors therefore developed a logical model that discriminates three classroom learning styles: the dependent style, the collaborative style, and the independent style. In studying these approaches to learning, they found that any one person will learn in all three styles, but may prefer a particular style in a particular situation, based upon both personal preferences and the unique characteristics of the subject to be learned or the activity to be engaged in. In this model, no one style is better than another, although one may be more appropriate for a given individual or in a given situation. Thus the categories are value-free. Figure 1 outlines the three styles as they might apply to kinds of classroom experiences, with learner needs and teacher roles and behaviors specified.

Insert Figure 1 About Here

LEARNER STYLE	LEARNER NEEDS	TEACHER ROLE	TEACHER EDUCATION
DEPENDENT (may occur in introductory courses, languages, some sciences where learner has little or no information upon entering course)	structure direction external reinforcement encouragement esteem from authority	expert authority	lecturing demonstrating assigning checking encouraging testing reinforcing content transmitter grader materials designer
COLLABORATIVE (may occur where learner has some knowledge, information, ideas and would like to share them or try them out)	interaction practice probe myself and others observation participation peer challenge peer esteem experimentation	co-learner environment setter	interacting questioning providing resources modelling providing feedback coordinating evaluator manager process observer grader
INDEPENDENT (may occur when learner has much more knowledge or skill upon entering the course and wants to continue to search on own. May feel instructor cannot offer as much as he/she'd like)	internal awareness experimentation time nonjudgmental support	facilitator	allowing providing requested feedback providing resources consultant listener negotiator evaluator

Figure 1. Learner/Teacher Descriptors

Some learning outcomes require a particular style for a particular learning experience. For example, most beginning skills classes assume that students have little or no prior experience, and a dependent learning style is therefore appropriate. If students are to learn to work with unfamiliar equipment, a computer terminal, for example, neither collaborative discussion nor independent exploration are efficient, reliable means of learning. Similarly, in a course which focuses on developing skill in group problem solving, a collaborative style is most appropriate. Interaction with others is essential to the learning of the skill. Dependent students require structure, direction, and reinforcement; collaborative learners prefer interaction, practice, and experimentation; and independent learners need time and nonjudgmental support. Each calls for different behaviors on the part of teachers.

In addition to identifying learner styles as appropriate to different kinds of learning experiences, individuals may also find particular styles more in keeping with their personalities than others. Some of us are simply more collaborative (or more dependent, or more independent) than others, and when given a choice of ways in which to accomplish a given objective, are more likely to select the option that allows greater interaction (or greater reliance, or greater freedom and personal responsibility). In the process of individualizing teaching and learning, some teachers are developing learning packets that allow students to select the method they choose to reach a particular objective. Figure 2 details an objective for a hypothetical course, the student options for reaching the objective, and the means of evaluation that will be used to measure the students' success. Note that it is the outcome, not the method, that is important in this example; thus the student has the choice of the means of attaining the objective. In an extreme oversimplification of the personality type that would choose each alternative, the authors envision the options in Figure 2 being offered to a class comprised of Peanuts characters . . . Linus would undoubtedly select Option 1, Charlie Brown Option 2, and Shroeder Option 3.

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Insert Figure 2 About Here
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Based on this model, the authors developed a relatively simple instrument, the Learning Interactions Inventory (LII), to classify personally positive classroom learning experiences according to behavioral descriptors (copy enclosed).

Face validity, construct validity, and reliability were established. Correlation coefficients of LII scores with self-ratings were significant at the .01 level or better; Kuder-Richardson-20 reliability measures ranged from .63 to .72, and 23 of 30 students (77%) rated the LII accuracy as 4 or 5 on a five-point scale.

The inventory was then used to measure the accuracy of students' perceptions of one another's preferred styles and the accuracy of faculty perceptions of students' preferred styles. In addition, over 2500 inventories were distributed to fifteen institutions, with the results analyzed by demographic characteristics, the most significant of which turned out to be year in school and age. These findings are discussed below.

Student views of one another. To begin to look at how students view other students whom they supposedly know well, a small, highly personally interactive class of six students and one faculty (one of the investigators)

The student will demonstrate knowledge of the three major schools of psychological thought by passing a multiple-choice exam based on the concepts essential to each.

OPTION 1: Attend three one-hour lectures and complete assigned readings and worksheets. Worksheets will be corrected by instructor or teaching assistant.

OPTION 2: Attend discussion groups led by instructor and teaching assistant and participate in dialogue concerning the schools of psychological thought.

OPTION 3: Use bibliography and text to study on your own.

Exam will be composed of fifty multiple-choice items. Scoring will be as follows: A = 95-100%; B = 86-94%; C = 78-85%; D = 70-77%.

Figure 2: Psychology 101: Objective 15

was selected. All seven persons took the LII, discussed the model, and rated each of the others by distributing ten points among the three styles for each person. Each individual's ratings of the other six were correlated with the actual LII scores. Results obtained showed no significance, except for the ratings of the instructor (investigator).

Although the N of six is too small by which to draw any conclusions, it would appear that perhaps even when students think they know one another well, they do not accurately describe each other's learning preferences. Either these preferences are naturally more private (less obvious) than might be assumed, or this particular class, which depended upon interaction, did not provide an environment in which these learning preferences would emerge. The instructor, who was also one the developers of the LII, more accurately described the students. Perhaps this was due to her greater familiarity with the LII and the model on which it was based as well as a better developed perception of the behaviors that would indicate preferences for style of learning.

Faculty views of students. Faculty in each of three departments indicated departmental majors whom they (a) had in class, (b) advised, or (c) knew well. Each faculty then distributed ten points among the three styles for each known student, and these scores were correlated with the students' scores on the LII. The correlations of the average faculty ratings of eighteen faculty for fifty-two students with the students' actual LII scores are shown in Table 1.

		Average Faculty Ratings		
		Dependent	Collaborative	Independent
Actual LSI Scores	Dependent	0.12999	-0.01298	-0.13249
	Collaborative	0.03569	0.06944	-0.07691
	Independent	-0.14205	-0.07071	0.17956

Table 1: Correlations of Average Faculty Ratings With Student LII Scores N = 52

Although the correlations shown are in the expected directions, none is significant. This group of faculty, who professed both knowledge of their students and understanding of the model used, were not able to accurately describe their students' learning preferences. In perusing the individual faculty ratings as compared with the student's LII scores, it was seen that individual faculty tended to be consistent in how accurately they perceived students' preferences. That is, a faculty member whose perceptions of one student were far different from that student's LII score was likely to perceive others' inaccurately too.

In this research, all that can be said is that faculty, as a group, do not accurately assess their students' preferences, and that some individuals are consistently more accurate than others. It might be that some faculty better understand the model, that some are simply more accurate observers, and/or that some tend to perceive students in stereotypical ways.

Clearly, the findings from both the small sample of students who rated one another and the larger sample of faculty who rated known students demonstrates that, at least in this research, external perceptions of preferences for learning style should not be counted on as accurate assessments. Although the LII and an individual's self-perceptions are significantly correlated, the LII and external perceptions are not. Thus the need for objective assessment of learning style is supported.

Patterns Found

From the analysis of 879 usable inventories gathered from fifteen institutions, it was discovered that freshmen are indeed more dependent and less independent than seniors and graduate students, and that younger students are more dependent and less independent than older students; with collaboration scores remaining about the same across years in school and age. Tables 2 and 3 demonstrate these trends.

Group	Number	Dependent Mean	Collaborative Mean	Independent Mean
Freshmen	183	.3398	.3447	.3155
Sophomores	34	.3256	.3058	.3686
Juniors	51	.3432	.2959	.3609
Seniors	36	.2539	.3570	.3890
Graduate Students	452	.2630	.3431	.3938

Table 2: Style Scores by Year in School

Group	Number	Dependent Mean	Collaborative Mean	Independent Mean
Ages 16-18	182	.3424	.3458	.3119
Ages 19-22	135	.3226	.3215	.3558
Ages 23-28	181	.2570	.3450	.3979
Ages 29-35	127	.2968	.3352	.3679
Ages 35+	133	.2352	.3460	.4188

Table 3: Style Scores by Age

The LII might be further used to address instructional questions, such as: Do students change their learning preferences as a result of time or experience? Do students in different majors demonstrate different learning styles? Will students be more willing to participate in a non-preferred style if they are aware of the concept of learning style? Is there a relationship between style and quality of performance?

References

Hill, Joseph. The educational sciences. Bloomfield Hills, Michigan: Oakland Community College Press, 1976.

Kolb, David. The learning style inventory: technical manual and self-scoring test and interpretation booklet. Boston: McBer and Company, 1976.

Witkin, H. A. Cognitive styles in the educational setting. New York University Education Quarterly, 1977, 8, 14-20.

STUDENTS' CONCEPTIONS OF LEARNING AND GOOD TEACHING

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Introduction

As students have different views on learning, so teachers have different views on teaching. Particularly in the phenomenographic research tradition (Marton, 1981) fruitful research has been done into students' conceptions on learning and teachers conceptions on teaching. In this research tradition a distinction is made between a first- and a second-order research perspective. Scientists who work from a first-order perspective try to make factual determinations about reality. Phenomenographic researchers on the other hand work from a second-order perspective. They emphasize the centrality of the subject and his/her ideas of reality. Not how the world "is" but how people "see" it is essential in this approach. Marton (1981, p. 177) enters extensively into the latter point of view which according to him is characterized by "...., content-oriented and interpretative descriptions of the qualitatively different ways in which people perceive and understand their reality.".

Learning conceptions of students have been studied from a second-order perspective by Säljö (1979, 1982) and by van Rossum and Schenk (1982, 1983a and 1983b). Säljö posited the existence of five qualitatively different learning conceptions held by (adult) students. In an extensive interview he asked each respondent of a large and heterogeneous group the following question: "What do you mean by learning?". Analysis of the responses resulted in five different views on learning (learning conceptions). These varied from a view on learning as the acquisition of knowledge (learning conception 1) to learning as a way to

gain insight into reality (learning conceptions 5). Säljö (1982) goes extensively into the problems to which certain learning conceptions under certain circumstances can lead. In his opinion the basis of these problems is a matter of communication: the assumptions on which the subject-matter is based are often incompatible with those on which the learning process of the student is based. Säljö also indicates how he thinks about the genesis of such conceptions (1982, p. 198): "A failure to realize that it is these background experiences, forming an integrated part of a person's life-history, which serve as agents in perpetuating a certain orientation to learning tasks, will only make us miss the social nature and origin of our way of handling learning situations.".
In the Netherlands van Rossum and Schenk (1983a) did research into the learning conceptions of first-year psychology students in relation to study strategy and learning outcomes. They found a strong relationship between the three above mentioned phenomena, which says much for treating them as "internal relationships" in future. The latter, however, should be coupled with a fundamentally different methodological orientation in research of education.

As it appears from the discussion of Säljö's work (above), learning conceptions should not be seen as stable individual characteristics (see e.g. de Klerk, 1979). Especially Perry (1970) has pointed out that, besides differences between people, these various learning conceptions (knowledge conceptions as he conceives them) also reflect different stages in the identity development of the individual. In particular the epistemological development of students within a certain context, namely the university system, is at stake here.

Teaching conceptions of teachers have been studied from a second-order perspecive by Larsson (1983a, 1983b). On the basis of interviews he distinguished two teaching conceptions which correspond strongly with what Olson (1981) - from another point of view - called "high versus low teacher influence". Larsson (1983b, p. 6) speaks of a "Conception A: The essence of teaching is that a content should be presented and structured for the students. This means that the content should be prepared so that the student can learn without too much interpretation." and places opposite of this a "Conception B: Teaching ought to involve the students in interpretative and structuring work. If they are not involved, real changes will not occur or they will not develop real knowledge.". As one can see his dichotomy rests on the measure of (pre-)structuring and (pre-)interpretation by the teacher in the teaching-learning process.
As well as in Olson's research, as in that of Larsson the quality of the communication in the classroom was the main theme. Actually both studies dealt with the question: "Who controles the communication process in the classroom?". One can ask

oneself in this context whether or not these views of teachers are shared by the students: are there students who prefer a high, and others who prefer a low teacher influence? In the elaboration and interpretation of his research data Larsson (1983a and 1983b) gives the impression that all students prefer a teaching style which is characterized by a strong (pre-)structuring and (pre-)interpreting role of the teacher. Students sometimes even seem to enforce this style, despite the will and ideas of the teacher: "They in fact force the teacher to exert strong control over the communication process." (1983b, p.8). It deals with a relationship between student(s) and teacher, which in literature on communication is described as "metacomplementary" (Watzlawick, et al., 1967, p. 67 etc.). Säljö also observes this phenomenon and not only connects it with characteristics of the educational system itself (e.g. the system of evaluation),but also with patterns of everyday social behaviour and thinking (like the ones apparent in TV-quizzes).

The present study

Departing from the found differences in learning conceptions we think it reasonable to doubt the general nature of the student behaviour described by Larsson. In research into learning conceptions students display between the lines rather rigorous differences in their preference of teaching style. What is more, the query for an "open" teaching style is certainly not lacking. In the study to be discussed hereafter, we have in addition to the learning conceptions also explicitly asked after the students' teaching conceptions. The main research questions were formulated as:

- Which qualitatively different views on (good) teaching do (first-year) students have?
- To what extent do these differences in view relate to the found qualitative differences in learning conceptions?

Method

The above-mentioned questions were studied as part of a research project which was concluded by the end of 1983.

Subjects and procedure

Ninety freshmen of the Faculty of Arts of the Tilburg University were asked, before the courses commenced - as a part of a comprehensive study counceling project (see Mulders, 1983) - to respond in writing to the following two questions.

1. What do you mean by LEARNING? What is your idea about it? Describe in short a) what activities are in your opinion a part of it, and b) what do you try to achieve through these (learning) activities?

2. Teachers sometimes show very different ways of teaching. This corresponds with the different views these teachers have on (good) teaching. What do you mean by GOOD TEACHING? Which style of teaching appeals to you the most?

All of the ninety subjects agreed to respond.

The answers were, after repeated reading, categorized by the two researchers independently. Through discussion the final response categories were determined, after which a reliability test was done for both categorizing systems. The interrater reliability for learning conceptions as well as for teaching conceptions equaled 84%. Subsequently a qualitative analysis of the relationship between the answers of each respondent was carried out. Lastly the answers to both questions were related in a quantative way.

Results

First we will describe the variation in learning conceptions. The first five conceptions which also emerged from previous research we will paraphrase only briefly. The sixth and last learning conception which emerged in the present study will be more extensively discussed.

Learning conception 1: *the acquisition of knowledge*

The student describes broadly that in his/her view learning is the acquisition of knowledge. The aim is mostly to "know a lot". Activities belonging to the learning process are not or very vaguely mentioned.

Learning conception 2: *memorizing*

Learning is often described as the storage of knowledge, that can be reproduced at a later moment. The purpose is for instance getting good marks. Activities frequently mentioned are the making of abstracts and "learning" them, so that as much as possible is memorized.

Learning conception 3: *utilisation and/or use of knowledge*

Answers which can be categorized as such suggest that there is more to learning than possessing knowledge or getting good marks. Memorizing facts is often explicitly rejected. At the same time it is frequently emphasized that the knowledge and/or skills acquired should also be utilized. All these activities however remain rather reproductive in nature.

Learning conception 4: *the abstraction of meaning*

Learning is a process of gaining insight, a process by which relationships are sought within the subject-matter and between subject-matter and reality. The student has become constructive and tries to work creatively with the subject-matter. Learning has acquired a "thematic" quality (Säljö, 1982, p. 82 etc.), i.e. it has become a phenomenon about which reflection is possible and takes place. This reflection deals mostly with the distinction "surface learning versus deep learning" (see van Rossum and Schenk, 1983a), which to some extent is experienced as problematic or context-dependent.

Learning conception 5: *learning as an interpretative process aimed at understanding reality*

Learning is seen as a means to gain understanding of the world around us. You don't learn for others, nor for marks: you do it because you want to, because you think you will "gain" from it. The student becomes more "self-engaged", he/she begins to think more "personalistic", but at the same time starts to see the relativity of his/her ideas. The personal view of reality, which is this phase is being constructed, is considered to be one of the many possible.

Learning conception 6: *self-actualization*

Reading the answers - initially placed in category 5 - a difference within them intuitively struck us. The language used by some respondents differed from that of the others, it expressed an other than purely cognitive attitude. These students consider learning more an aim than a means to an end. Answers as "learning is living and living is learning" and "learning is growing, and growing is conditional for a meaningful existence" illustrate this attitude and the almost poetic use of language in which it is expressed. In these answers the emotions, the intuition, the person of the subject seem to play a more important part than in any of the other response categories. In our opinion those students, to whom Harri-Augstein and Thomas (1979, p. 119-120) refer to as "self-organised learners" belong to this category. They say about them: ".... our view of people as learners. PEOPLE SEEK MEANING. THE CREATION OF MEANING, THE PROCESS OF ACHIEVING PERSONAL KNOWING IS LEARNING." and "The personal scientist, the Zen master, the fully functioning person, the self-actualizing individual, the excellent craftsman and mountain climber are all self-organised learners.".

As well as there is a caesure between learning conception 3 and 4, concerning the distinction reproductive-construcive, so the demarcation line between learning conception 5 and 6 marks another gap. It not only manifests itself in the learning conceptions of the students, but is also an expression of two different philosophies of life. Pirsig (1983) has described this gap strikingly by means of sketching the ways in which people climb mountains. He discerns the so-called "ego-climbers" and the "selfless climbers". The selfless climber is of opinion that "... Mountains should be climbed with as little effort as possible and without desire......,each footstep isn't just a means to an end but a unique event in itself......It's the sides of the mountain which sustain life, not the top." (p. 198). The ego-climber on the other hand ".....rejects the here, is unhappy with it, wants to be farther up the trail but when he gets there will be just as unhappy because then *it* will be "here". What he's looking for, what he wants, is all around him, but he doesn't want that because it *is* all around him." (p. 206). The same difference in philosophy of life is expressed in the working method of the "bad workman" (or a novice) versus that of the "craftsman" (or an expert). "Sometime look at a novice workman or a bad workman and compare his expression with that of a craftsman whose work you know is excellent and you'll see the difference. The craftsman isn't ever following a single line of instruction. He's making decisions as he goes along. For that reason he'll be absorbed and attentive to what he's doing even though he doesn't deliberately contrive this. His motions and the machine are in a kind of harmony......"Sounds like art,"....."Well, it *is* art," I say. "This divorce of art from technology is completely unnatural...."....."(Pirsig, 1983, p. 160-161). To illustrate the sixth learning conception we give a quote from the answer of one of our subjects (subj. 79): *"In this connection I mean by learning a conscious process to come to self-realization, impeled by curiosity. The "learning" of the most arid subject-matter can only be possible for me if this subject-matter is directly or indirectly connected with the way I stand in life. There must be points of contact with someone's inner life, there must be questions crying for an answer. Learning is the handling of the means "knowledge" in such a way, that it means an enrichment of the personality."*.

The distribution of the subjects over the various learning conceptions is shown in tabel 1.

Learning is	(1) acquisition of knowledge	12 (13.3%)
	(2) memorizing	21 (23.3%)
	(3) utilization and/or use....	23 (25.6%)
	(4) abstraction of meaning	17 (18.9%)
	(5) learning as an interpretative process aimed at understanding...	14 (15.6%)
	(6) self-realization	3 (3.3%)
total		90 (100%)

Tabel 1. The distrubution of the subjects over the various learning conceptions

In the table we see that a majority of the answers of these first-year Arts-students can be placed in the category "surface learning". Namely 62.2% of the answers of the group in question falls under one of the first three response categories, which have a reproductive view on learning in common. In a preceding study under first-year psychology students (van Rossum and Schenk,1983a) also only one-third of the answers could be placed in the "deep learning" category.

In the second phase of the elaboration of our study we tried to describe variations in teaching conceptions of this group of students. Hereby the earlier described distinction between an A-conception (which implies a large measure of structuring and interpretation by the teacher) and a B-conception (which is characterized by little structuring and interpretative work by the teacher) made by Larsson acted as reference framework. Larsson (1983b, p.6) notes that the answers of some of his subjects could not be placed in one of his categories ".....because they expressed conceptions that were mixed forms of A and B.". We also found mixed forms of both extremes in our data. Two groups of subjects with teaching conceptions which differed from eachother and from Larsson's A- and B-conceptions, but with strong internal similarity, emerged from this study. So the careful process of empathic reading and rereading resulted in the following four teaching conceptions.

Teaching conception D: *directism*

Education is primarily seen as transference of information. The teacher structures and interprets the subject-matter for the students: he trots out knowledge and skills, he explains "well", gives the overall picture and clarifies matters, for instance by means of "concrete examples". The teacher should indicate the relationship between theory and practice ("what you can do with it"). Often examples from practice are requested to clarify the theory. The teacher should motivate the students. His classes must not be "dull", they should be full of humour and "interesting". Moreover it is often suggested that the teacher should entertain and keep the students busy continuously. The student is in every way dependent of what the teacher does or has in mind.

The undermentioned quotes from the answers of our subjects show the emphasis on the various aspects of this (idealized) view on teaching.

> *"Explanations should be good, entertaining and in understandable language. It's important that a teacher is able to illustrate his subject-matter, and to give examples from practice." (subj. 64)*

> *"Build in time for a joke and a laugh." (subj. 23)*

> *"Good teaching must be clear and entertaining. Besides that it would be nice if it was varied, consequently during half an hour you are told something, after which you start working yourself by reading an article or answering questions." (subj. 53)*

> *"Good teaching is for me, the transference of knowledge, and by means of tests and assignments checking whether or not you have, as a teacher, achieved this goal." (subj. 82)*

> *"Good teaching works with concrete examples, that clarify a theory." (subj. 26)*

Teaching conception LD: *limited directism*

Dominant is the conception as described above. The student however distances himself from the "too authoritarian" teaching, in which the teacher is inclined to present his own opinion as the *Truth*. He/She thinks there should be room for the opinion of the student; there is an emerging feeling of self-determination. The teaching-learning process is structured by the teacher, but the students claim a limited amount of influence. As examples of this are mentioned - mostly vague and poorly elaborated - "independence", or "one's own initiative". Also the possibility of criticizing the teacher is mentioned. Some quotes:

> *"The teacher.....provides the information. By a good relationship I mean the teacher takes pains to approach the students actively, consequently he involves them in the teaching/involves them in the subject-matter. For instance, he asks what the group prefers: only lecture notes, lots of explanation, only the text-book, and tries, after his own judgment, to find an acceptable combination of these (acceptable for both sides)... ...Furthermore I think, that the students should be given a considerable measure of independence, without this being at the cost of the teaching. That is to say, not too concise lecture notes, etc.." (subj. 40)*

> *"A good teacher doesn't twaddle on and on for a whole hour, neither does he have his students note down everything indiscriminately. Now and then a funny remark or letting the students give their own opinion is much nicer." (subj. 83)*

> *"For instance, I once had a teacher who was rather authoritarian, but still knew how to present it in such a way, that one did one's best for that subject. Well meant, however not the right way of teaching according to me." (subj. 34)*

> *"For me the most ideal way is explaining together with the students, that is to say, the teacher starts his explanation somewhere, but gives the students every freedom to pose any question, make (supplementary) remarks, pass criticism, etc. at any time." (subj. 43)*

Teaching conception O: *openness*

Most important here is the self-determination of the student: self-activity, self-determined structuring and initiative by the student. Education should contribute to the self-realization of the student, it should be inviting and subservient. The student must be invited to start working himself, to seek the essence of the matter himself. One resists the coercion of the teacher. A dialogue between teacher and student is considered necessary: a situation wherein both associate on equal base is emphasized. Engagement of the teacher with the subject and the teaching is indispensable. "Compulsory" education, learning under coercion is explicitly rejected. The teacher must continuously be prepared to put himself - his attitudes, views and behaviour - on the line. Again we give a few quotes to illustrate the conception.

> *"I do know that..... whenever somebody starts telling me I should do things this way or that, my blood begins to boil." (subj. 21)*

> *"In my opinion a good teacher should show a certain engagement with his subject. He is capable of transmitting his enthousiasm for the subject to his audience; he should also be able to teach around the subject, he's not afraid to try something different once in a while and doesn't stick to well-trodden pathways. He doesn't shrink from putting his own position on the line and doesn't present himself as the "knowall..." (subj. 68)*

> *"Good teaching is teaching that is based on equality, wherein the opinions of others are respected,...." (subj. 36)*

> *"In my eyes good teaching prompts self-activity. Not only knowing dry facts, but provoking curiosity for backgrounds, connections, etc.. Consequently good teaching makes self-realization possible."* (subj. 57)

> *"To me good teaching is to a large extent guided independence. With this I mean that you work your way through the subject-matter yourself, taking full responsibility for it, but that there always is a teacher at hand to help you along....."* (subj. 49)

Teaching conception OO: *organized openness*

The above sketched conception is predominant, but it isn't free from elements of the directive teaching conception (although they clearly play a secondary part): the teaching may not become "a mess", one should have a certain amount of order, whether or not based on the teacher's "strictness". There is fear for "too much" openness in the teaching-learning process, because it might show to be unproductive. The goal of education ("learning something") may of course not be pushed into the background. In some cases it is indicated that teaching should occupy itself with the "deep level" structure of the subject-matter, however this structure ought to be presented by the teacher. The exclusive request for teaching of relationships and connections is an example of this.

A few quotes to illuminate the place of this teaching conception:

> *"To me good teaching doesn't mean an authoritarian way of teaching, no more than leaving pupils (students) free in such a way that the aim of schooling is pushed too far into the background. It depends in large measure on the group whether or not it's possible to teach in a "free" way (With a "free" way I mean classes in which students themselves often determine how the lectures are going to be arranged and wherein they can take a lot of initiative and are not guided too much (unvoluntarily) by the teacher....).....The most important I think is that there is some measure of order, which of course, if possible, should preferably be very unconstrained. And if that isn't possible then, if need be, a somewhat stricter approach is allowed, so that teaching is still possible and it isn't a (....) "mess" all the time."* (subj. 71)

> *"Teaching is trying to cultivate the students' interest in the subject-matter, because learning is easiest when you are interested. The teaching must make learning attractive. Possibly the best way to do this is by emphasizing surveyability, the structure and interrelations as much as possible."* (subj. 73)

> *"In fact I know teachers, who want to approach everything extremely democratic, don't organize anything themselves, but leave everything to the students, who are permitted to arrange classes themselves, even up to the exams. I can't stand this at all, because then students are all too quickly inclined to simplify everything dreadfully, after which it becomes evident that it hasn't carried you a step further. The opposite of this is the teacher who reels off his story which then "of course" is the only true one, and in which case students' own contributions are unwanted and thus are simply ignored.....As said I think a normal interaction is the most pleasant. The teacher can have his say and if someone wants to react it should be possible, as long as it doesn't turn into endless "slush". "* (subj. 11)

Table 2 shows the number of subjects per teaching conception.

directism	38 (43.2%)
limited directism	22 (25.0%)
organized openness	12 (13.6%)
openness	16 (18.2%)
total:	88 (100.0%)

Table 2. The number of subjects per teaching conception (The answers of two of the ninety subjects could not be categorised, because they contained insufficient information to base a decision on.).

We see that 68% of the subjects prefers a form of directism. Consequently 32% prefers (organized) openness. The suggestion that most students are greatly taken with a rigid teaching style is hereby, for the group studied here, clearly refuted.

The existence of (some of) the found categories is confirmed by a number of studies, set up from a different point of view. Parallels are found in the work of Zeichner (1983), Biggs (1981) and Scobie (1983). Zeichner (1983) describes a number of educational ideologies. Especially the contract between "behavioristic teacher education" and "personalistic teacher education" links up with our extreme categories. In the first ideology the prospective teacher is given a passive role, like the students in our directive teaching conception. Zeichner (p. 4) describes this conception as follows: "The prospective teacher is viewed primarily as a passive recipient of this professional knowledge and plays little part in determining the substance and direction to his or her preparation program.". The personalistic ideology emphasizes the personal development of the student, an accent that can also be found in our conception "openness". "According to this view", Zeichner (p. 4) remarks, "teacher education is a form of adult development, a process of "becoming" rather than merely a process of educating someone how to teach.". Biggs (1981) mentions four "models of schooling" which link up with three "models of man". Our teaching conceptions seem to follow these distinctions. Biggs distinguishes between a view of man as reacting man, as thinking man and as feeling man. The reacting man-view is based on the idea that the student is in essence a reactor and not an agent and one typically finds this view in traditional schools. It is characterized by the teacher's unremitting control over the teaching-learning process. The reacting man-view also underlies the "behavioral engineering"-approach: forms of teaching in which directism is somewhat limited, like for instance P.S.I. (see van Rookhuyzen, 1982). The thinking man-view Biggs associates primarily with "open schools". The teaching conception dominant there bears a strong resemblance with what we have called "organized openness": "Discovery and enquiry methods rather than exposition..... The emphasis is on activity, self-selected tasks, centre of interest and group discussion.". However: "....the teacher has to be

very careful to design the situation so that the student does not become lost or discouraged through insufficient information." (Biggs, 1980, p. 58). "Openness" finally shows striking parallels with the feeling man ideology, which according to Biggs prevails in the so-called "free-schools". In this type of school one concentrates mainly on the affective development: "It is believed that cognitive learning will take care of itself once the individual feels good about himself, and feels a personal need to solve a problem. He will organize himself to do so." (Biggs, 1980, p. 59).
Scobie (1983) mentions four teaching styles which show strong resemblance with our four teaching conceptions. "Collaborating (teacher works with student more as a partner, allowing increasing independence)" seems to almost overlap with "openness", while "directing (teacher takes major role in planning, directing activities, and assessing)" approximates our "directism". The two mixed conceptions are also present here: "limited directism" is very similar with what Scobie (1983, p. 139) calls "contracting (teacher takes major role but provides chance for student to decide some things under close supervision)" and our conception "organized openness" has as its counterpart Scobie's "delegating (teacher allows students to take major role in deciding things)".

The question remains however whether there is a relationship between learning conceptions and teaching conceptions. More precisely, are descriptions of learning and (good) teaching in line with each other? The answer to this question is affirmative. The subjects' descriptions of learning often link up perfectly in use of language, but more important, in underlying philosophy with their descriptions of teaching. Someone who's convinced that learning is a process of self-realization, turns out to think and write about teaching in clearly different terms, than someone who conceives learning as the memorizing of facts. The latter doesn't - in his own opinion - benefit at all by an "open" teaching style. Concepts as "dialogue" and "mutual respect" are not part of the vocabulary of someone with a reproductive learning conception, because the process of learning on this level requires a fundamentally different form of communication between student and teacher. The relationship between learning and teaching conception has a "logical" as well as an "empirical" character (see for this distinction Marton, 1983). The way in which the thinking about learning and teaching converges can, in our view, be well illustrated by giving the complete answers of four subjects with different views on learning and teaching:

Learning conception (subj. 3)	*"I mean by learning to gather knowledge, by means of studying all sorts of material. When I find the subject I'm studying is interesting, I like learning. I like learning when I have to read things, out of which I then pick for myself the most important points, so that I understand the subject-matter*

well; but if I have to learn something by heart gratuitously I hate learning. I think "learning something" is very important, because through this you gather knowledge, and I find the having of knowledge very important."

teaching conception (subj. 2) *"To me teaching is good, when it's presented in a captivating and clear way. For me the best style of teaching is teaching in which some theory is presented and clarified by examples from practice."*

Between both accounts there is a complementary relationship: it deals with the "acquisition of knowledge" that the teacher has to clarify or interpret beforehand.

Learning conception (subj. 72) *"Learning is trying to understand, grasp and memorize knowledge. This is possible through self-study or by attending lectures. In the former case you can act individually: you read texts, make abstracts, note down catchwords, try to see the connection between the successive catchwords and you repeat everything later on to see whether you have memorized the (main) points. You can also work in groups: you learn with several people at the same time. First you scan the text yourself, you notice main points and together you discuss what is woven around the main points. Acquiring knowledge by means of lectures is very different. You hear what is said in the books, get everything as it were spoon-fed. Later while reading you come across things which have been dealt with and if you recognize that it's much easier to memorize those things, than when you hadn't had it all treated beforehand.*
With my learning activities I try to accomplish that I'm able to memorize and perhaps to use for instance in my future job, all I have learned. But there are lots of things you more or less forget, although when you hear or read about them some time later, it often occurs that they seem familiar and you say "indeed it was like this or that". Nearly allways you can somehow use the things you've learned, not only in your job, but also in everyday life. The ultimate goal: gathering and increasing knowledge: for yourself (you can talk about things) or for a job (first you have to gather knowledge and finish your education)."

teaching conception (subj. 72) *"I think there should be a certain measure of freedom in classes, but also a pressure that gets you at work and keeps you going. Firstly the atmosphere is of decisive importance: when you don't feel at ease, the results will detoriate visibly! The freedom should consist of for instance the possibility of making remarks, asking questions, etc.. The pressure should consist of some system that's constructed in such a way, that you're forced more or less to keep yourself on the job, for instance because one goes on with the subject-matter, and because you are stimulated to do so. Presenting the subject-matter in an interesting way strongly affects the interest of the pupils. Freedom, in the sense of being allowed to come too late, seems inappropriate to me, because it can be very disturbing when people come walking in and out all of the time in stead of paying attention.*
A certain measure of peace and quiet in classes is also very important, otherwise you're far too easily distracted by others or it becomes so noisy that following the teacher becomes impossible. He himself will then be desperate too, thus he'd better be a bit stricter, so that everybody can follow his classes. I think it wouldn't be a good idea to

work on projects and to do inquiries yourself throughout the year. Once or twice is fine. You learn to gather knowledge and you memorize it better. A disadvantage is that it is very time-consuming in comparison with "ordinary lecturing" and you don't seem to penetrate into the deeper and more complex things."

The learning conception of this subject shows a (rather fanatical) thirst for knowledge, whilst at the same time the useability of this knowledge at a later moment is refered to. In the teaching conception we find along with a comparable main theme (strictly regulated transference of knowledge) also some indications of a developmental process. Especially the last paragraph shows that good teaching "is" more than pure "directism".

learning conception (subj. 18)

"a) Learning, that means to say that you want to take in/understand a certain amount of subject-matter, you want to gain insight in that subject-matter, so that you can do something with it. The following activities are part of it: firstly you have to get an impression of the subject-matter in its totality (the amount, the degree of difficulty of it). The best way to get that impression is by working through introductions, seeing which chapters and possible subdivisions the subject-matter consists of. Then you have to make a kind of plan for yourself: which chapters/parts of the subject-matter are important, which less important? Subsequently you can, by making abstracts (at least that's my way) summarize in a concise way what's most important of the subject-matter. This can be very useful, especially when, at seeing the subject-matter, you have the feeling you can't see the wood for the trees. When you work through the subject-matter in this way, you can get, in my opinion, a reasonable insight in the subject.
b) With these learning activities I want to achieve that the subject-matter becomes "mine", that you understand what the author of the written-matter wants to say, and that you see which possible underlying intentions a text can have. Also it's important that you see the usefulness of the learning of a text. Otherwise it's also difficult to concentrate on the subject-matter, it doesn't carry you any further, does it?

teaching conception (subj. 18)

"Good teaching: teaching in which the student him/herself participates actively, in the form of seminars etc.. In this case the student's involvement in the subject-matter is far greater than when the teacher/professor lectures and the students only listen. This need not lead to "over-democratisation" within the school, and teaching being reduced to nothing (the students themselves determine what and how they learn). A mixture, a form in which students are being involved in the teaching-program, in which they themselves start working on projects together, etc., seems to me to be the most desirable form of teaching."

Here we see a constructive learning conception (the student pursues insight, looks for the author's underlying intentions, etc.), which is coupled with a preference for a mixture of the two extreme teaching conceptions. A predominating role of the teacher is rejected, but at the same time there is a fear for "over-democratization". The student clearly isn't on a level where he/she accepts full responsibility for the learning process.

learning conception (subj. 44)	*"Learning can be done in many ways. By experience and from books. One way is none less than the other. A combination of the two often works best. Often you need a theoretical foundation (books) to be able to understand your learning from experiences. I would prefer studying and at the same time working with what I learn.* *Firstly I learn to broaden my outlook. Secondly to eventually be able to do work I consider meaningful.*
teaching conception (subj. 44)	*"Good teaching links up with the things you come across yourself in your own life. With good teaching you see the meaning of what you're engaged in.* *I think I can't very well stand abstract theorizing, which bogs down into endless word-games.* *As for thinking, I must have the opportunity to participate activily and to have my own contribution. If someone just stands there and talks in front of the class, my thoughts begin to wander.*

On this level learning has become a personal process, in which you try to understand particularly your learning from experiences. Therefor teaching has to take the perspective of the individual as a point of departure (it "links up with the things you come across yourself in your own live"). The teaching conception presented above cries as it were for room for self-realization.

The picture of the connection between learning conception and teaching conception, that is suggested in the above given quotes, is confirmed by qualitative data. In table 3 the number of students per learning and teaching conception is shown. In figure 1 the relationship is illustrated by means of histograms. For each learning conception the distribution of the students over the teaching conceptions is shown.

		TEACHING CONCEPTION				total
		Directism (D)	Limited Directism (LD)	Organized Openness (OO)	Openness (O)	
LEARNING CONCEPTION	1	12	0	0	0	12
	2	17	4	0	0	21
	3	6	15	1	1	23
	4	2	2	9	4	17
	5	1	1	1	9	12
	6	0	0	1	2	3
	total:	38	22	12	16	88

Table 3. Distribution of the students over learning and teaching conceptions

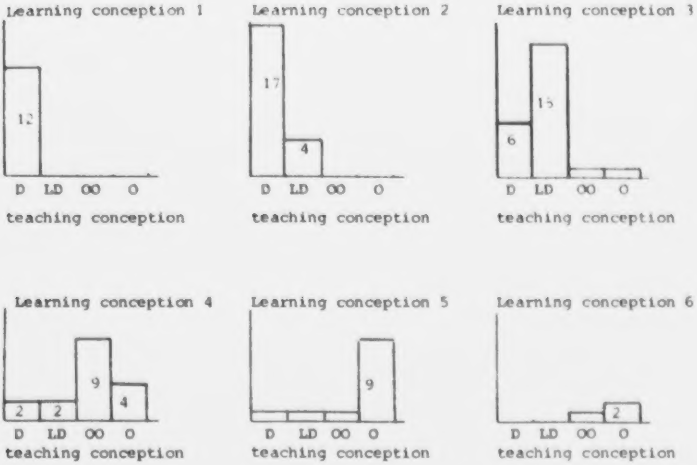

Figure 1. Distribution of the students over the teaching conceptions for each learning conception

As can be seen in table 3 and figure 1, a predominant number of the students having a reproductive view on learning asks in their description of good teaching for (strong) guidance by the teacher. In table 3 we can see that, of the 33 students with a learning conception 1 or 2, 29 have a teaching conception D (88%). The interrelation of a reproductive view on learning and a directive view on teaching becomes even more clear when we take together learning conception 1, 2 and 3, as well as the directive teaching conceptions (D and LD). Then it shows that of the 56 students with one of these learning conceptions, 54 (or 96%) have a preference for (limited) directism.

On the other hand there is an interrelation of constructive learning conceptions and "open" teaching conceptions (OO and O). Students who conceive learning as a creative process typically are more in need of having their say and less of (pre-) structuring and interpreting by the teacher: of the 15 students with learning conception 5 or 6, 11 (73%) have an "open" teaching conception. Of the 32 students with a learning conception 4, 5 or 6, 26 (81%) prefer either teaching conception O or OO.

Discussion

From the data of this study it can be concluded that students not only differ in their conceptions of learning, but also have qualitatively different ideas about "good" teaching. Also it can be stated that these ideas - their teaching conceptions - link up logically as well as empirically with their conceptions of learning.

In our opinion two implications can be drawn from this study. In the first place it has a consequence for teachers. They can try to diagnose the students' level of learning and use it as basis for present teaching and future development. Nevertheless the question arises whether they are willing to do this, or even more so, whether they are capable of doing this.
The willingness under consideration is in our opinion - within the academic world - closely bound up with the importance that traditionally is attached to teaching compared with that attached to doing research. Up to now teaching seems to play a secondary part within the Dutch university system, with all the obvious consequences hereof.
On the other hand it is very much the question whether teachers can be considered capable of taking the mentioned differences into account in a flexible manner. The impression is often given (see e.g. Scobie, 1983), that teachers can wield various teaching styles - associated with the above mentioned teaching conceptions - at will. This is, we think, an unjust presupposition, that moreover underlies the failure of the implementation of many educational innovations (see Olson, 1981). Just as a student with a memorizing learning attitude can't "suddenly" switch to a way of learning aimed at self-realization, so a teacher is also bound by a developmental process. Work done by Larsson (1983b) shows that teachers with a "B-conception" are able to react in a flexible manner to important situational factors, like the student's learning conception. Teachers with an "A-conception" seem however to be confined to a teaching style related to their teaching conception, and are only susceptible to quantitative aspects of the teaching context, like time-constraints.

In our opinion the latter again has implications for teacher training at universities: not only the acquiring of didactic skills should be emphasized, but equally the awakening and development of one's own personal view on learning and teaching. For that matter it concerns itself here with a likewise discussion that has been taking place for years in the field of study skills training.

A second implication comes forth from the previous and has to do with teacher education on all levels within our educational system. We think the prospective teacher must be given, more than before, the facilities to develop a personal view on the teaching-learning process, to develop one's own person. Only "self-organised learners" are in fact able to get students to gradually accept the responsibility for their own learning process. This means that a primarily personalistic model of teacher education (Zeichner, 1983) is preferable. Of course such an educational model gives no guarantees for a teaching style more aimed at the process and content of learning (set against one aimed at learning products and marks), but it does enlarge the possibility of it. So in our opinion this is the best way to educate teachers, who are capable of taking important qualitative differences between pupils/students in knowledge and skills into account.

In any case, concerning tertiary education, it is to be hoped that the Dutch university anno 1984 is no reflection of the university in the United States, as it was characterized by Pirsig (1983, p. 195) "The whole idea of individual creativity and expression in the classroom was really basically opposed to the whole idea of the University.".

Literature

Biggs, J.B.& R. Telfer, *The process of learning*. Collingwood, Vic.:Prentice-Hall of Australia, 1981.

Harri-Augstein, S.& L. Thomas, Self-organised learning and the relativity of knowing: Towards a conversational methodology. In: *Constructs of sociality and individuality*, Stringer, P.& D. Bannister, London: Academic Press, 1979, 115-132.

Klerk, L.F.W. de, *Inleiding in de onderwijspsychologie*, Deventer: Van Loghum Slaterus, 1979.

Larsson, S., Paradoxes in teaching. Paper presented at the ISATT symposium "Teacher Thinking: A new perspective on education". Tilburg,October 26-28, 1983 (a).

Larsson, S., Describing teachers' conception of their professional world. (in press) 1983 (b).

Marton, F., Phenomenography - describing conceptions of the world around us. *Instructional Science*, 1981, 10, 177-200.

Marton, F., Beyond individual differences. Internal publication, University of Göteborg, Zweden, 1983.

Mulders, W., Effekten van studiebegeleiding in de propedeuse. Internal publication, Tilburg University, 1983.

Olson, J., Teacher influence in the classroom: A contest for understanding curriculum translation. *Instructional Science*, 1981, 10, 259-275.

Perry, W., *Forms of intellectual and ethical development in the college years: a scheme*. New York: Holt, Rinehart & Winston, 1970.

Pirsig, R., *Zen and the art of motercycle maintenance*. London: Corgi Books,1983 (11th edition)

Rookhuyzen, R.F. van, De beïnvloeding van informatieverwerkingsstrategieën in een PSI-cursus. In: *Strategieën in leren en ontwikkeling*, (red.) Lodewijks, J.& P. Simons, Lisse: Swets & Zeitlinger, 1982, 121-131.

Rossum, E.J. van & S. Schenk, De relatie tussen leerconceptie, studiestrategie en leerresultaat. *Pedagogische Studiën*, 1983 (a),60, 252-262.
translation: The relationship between learning conception, study strategy and learning outcome. *British Journal of Educational Psychology*, 54, 73-83, 1984.

Rossum, E.J. van & S. Schenk, Qualitative Differences in Students' Conceptions of Memorizing, Understanding, Utilizing and Teaching. Paper presented at the Symposium on Qualitative Research in Psychology, Perugia, 1983 (b).
revised version is being prepared for *Higher Education*.

Rossum, E.J. van & S. Schenk, Eerste- of tweede-orde perspectief? Een compromis. In: *Strategieën in leren en ontwikkeling*, (red.) Lodewijks, J.& P. Simons, Lisse: Swets & Zeitlinger, 1982, 111-120.

Säljö, R., Learning in the learner's perspective. I - Some common-sense conceptions. Report from the Institute of Education, University of Göteborg, no. 76, 1979.

Säljö, R., *Learning and Understanding. A study of differences in constructing meaning from a text.* Göteborg: Allfotto i Göteborg AB, 1982.

Scobie, R., Situational teaching: Fostering self-direction in the classroom. *Curriculum Inquiry*, 13: 2, 1983, 131-150.

Watzlawick, P., J. Helmick Beavin & D.D. Jackson, *Pragmatics of Human Communication. A study of interactional patterns, pathologies, and paradoxes.* New York: W.W. Norton & Company, 1967.

Zeichner, K.M., Alternative paradigms of teacher education. *Journal of Teacher Education*, 1983, 3, 3-9.

TEACHING EFFECTIVELY: SOME PROBLEMS AND SOLUTIONS

WEDNESDAY, 4 JULY

1600 - 1730

IMPROVING THE TEACHING COMPETENCIES
OF CLINICAL TEACHERS

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Introduction

Clinical teachers in medical schools are admitted with potential in academic disciplines. They find it difficult to identify the specific steps and skills to use in teaching.(1) They, then, have attended more to what should and should not be taught than to how it should be taught.(2,3) The complexity of teaching and the difficulty of identifying the individual teacher's contribution to student learning are widely recognized.(4)

In Thailand, efforts have been directed toward systematic development of clinical courses as well as the improvement of the teaching skills of clinical instructors. The efficiency of teaching is a criteria to be considered in promotion for university academic rank. As a response to the growing recognition of the need for improvement in medical instructional practices, a training program on teaching skills was implemented starting from 1974. In 1975 the joint workshops in medical education among four medical schools: Chulalongkorn, Siriraj, Pra Mongkutkraeo, and Ramathibodi, were accepted as methods for two weeks in-service education.

Workshop methods

Each medical school will host a workshop one time per year with an assigned quota of participants. Consequently, four workshops will be held in one year with participants limited to thirty each. The objectives of the workshop expect that the attendant will be able to:

1. Define their problems regarding instruction practices including sources of educational problems and systematic problem solving.
2. Become aware of the essential development of curriculum in relation to need of society.
3. Be able to plan clinical teaching as follows:
   3.1 write down behavioral objectives
   3.2 design cognitive, psychomotor, and affective learning experiences.
   3.3 evaluate the learning experiences of the students.
4. Be able to work in a group.
5. Intend to be good teachers.

The sessions are arranged encompassing the following areas:

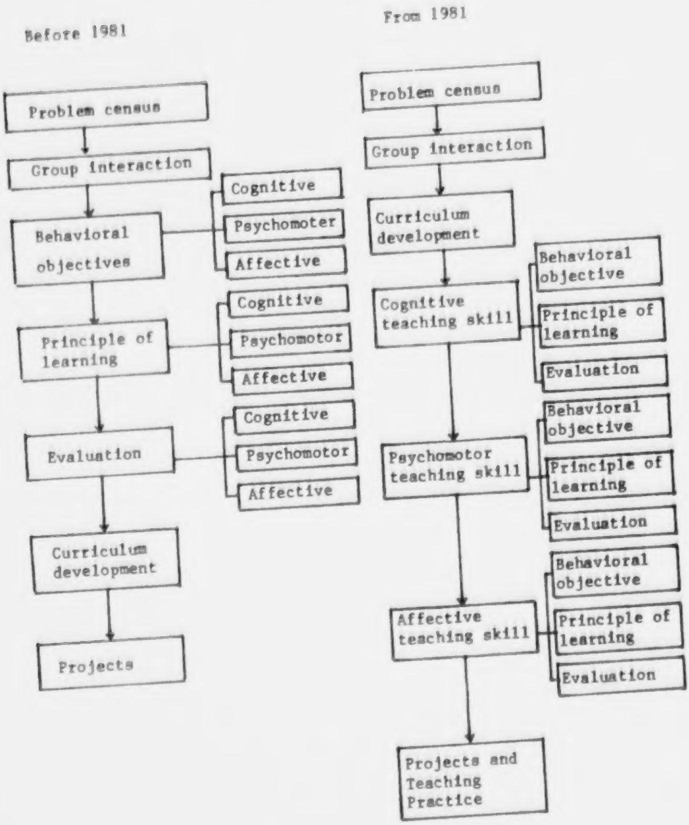
1. Problem census. Matching the problems listed by participants with the content topics of the schedule, including the principle of problem solving and systematic approach to educational planning.

2. Group interaction. The dynamic of the group is studied in communication, cooperation, value and conflict, group role, and feed back.
3. Principle of learning. The group is assigned to make behavioral objectives, instructional methodology, psychology of learning, and audiovisual aids.
4. Evaluation. Certain skills in the development and use of examination tools are presented in order for participants to be able to select appropriate evaluation procedures.
5. Curriculum development. The group is exposed to the process of curriculum change in relation to the health needs of the country including components of curriculum and the relationship between curriculum and teaching.

Before 1981, the learning experiences generally included discrete courses that cover educational subjects. The emphasis was on learning the disciplines rather than their application to the practice of instruction. In 1981, the program was organized around competencies required for teaching performance. Competence includes a broad range of knowledge, attitudes, and observable patterns of behavior which together account for the ability to instruct the medical students (see figure 1). The sequential arrangement of competencies make participants able to put education principles into practice.

FIGURE 1

MODEL OF TRAINING PROGRAM


Before 1981
From 1981
Problem census
Group interaction
Behavioral objectives
Cognitive
Psychomoter
Affective
Principle of learning
Cognitive
Psychomotor
Affective
Evaluation
Cognitive
Psychomotor
Affective
Curriculum development
Projects
Problem census
Group interaction
Curriculum development
Cognitive teaching skill
Behavioral objective
Principle of learning
Evaluation
Psychomotor teaching skill
Behavioral objective
Principle of learning
Evaluation
Affective teaching skill
Behavioral objective
Principle of learning
Evaluation
Projects and Teaching Practice

The learning experiences are organized in a manner in which participants can involve themselves in activities directly oriented to the achievement of the objectives. The work sessions generally proceed with small group discussions, simulation and games, case studies, mastery learning, and independent studies. The concept of good teaching performance is acquired through the presentation of individual or group projects. Video tape is required to feed back the teaching performance of each participant both verbally and non-verbally. The achievements of the participants are evaluated by pre-test, post-test, daily evaluation and program evaluation.

Method of Study

Since 1974, the workshop has been continuously developed and change can be found starting from 1981. The purpose of the study was to investigate the effectiveness of the new programs in 1982. The masterfiles of program training, including the reports, were reviewed.(5-8) The subjects used in the study were the participants of 1982 classes. The instruments used were a standardized pre and post test and two formats of questionnaires consisting of statements concerned with perceptions of various aspects of the programs and the process of training. A five point rating scale was used for the daily evaluation questionnaire and the scale of zero to ten was used for the program evaluation questionnaire. The questionnaires were administered before, during, and after the workshop. The statistical analysis was performed through the use of mean, standard deviation, and t-test. The results were tabulated and assembled in table form.

Findings

Eventhough the training program varied according to places, time, and the presence of some medical educators in addition of core medical educators, the achievement as found in the learning of participants was high (see Table 1). There was significant difference at the .001 level of probability between pre and post-tests.

TABLE 1

COMPARISON OF ACHIEVEMENT OF LEARNING

Medical School	No.	Test	$\bar{X}$	S.D.	t-test
Ramathibodi	26	Pre	34.88	5.81	7.03*
		Post	41.42	4.72	
Siriraj	22	Pre	30.45	6.65	9.44*
		Post	39.91	6.47	
Chula	33	Pre	29.11	7.54	7.26*
		Post	38.93	4.39	
Pra Mongkut	30	Pre	27.93	4.55	7.76*
		Post	38.43	5.69	

$^{*}P < .001$

With daily evaluation, it was found that the knowledge gained from the workshop can be applied to their clinical teaching. As can be seen in Table 2, most sections elicited large numbers of favorable responses from all participants. It showed that with a high mean score of between 3.22 to 4.30, all the groups thought they possessed to some degree, all the items.

According to program evaluation regarding the objectives of the program to which the teaching competencies were identified, the group as a whole showed significant changes in a positive direction. The pre workshop average score of 0 - 5.30 and post workshop of 3.30 - 7.87 with t of 6.07 - 14.91 were signified at.001 level of probability. In general, the items which showed the most significant changes were:

- To select the appropriate media of teaching.
- To write down the behavioral objectives.
- To select the appropriate teaching method.
- To select the appropriate content in regard to identified objectives.
- To be able to apply psychology of learning in their teaching.
- To be able to evaluate the achievement of the students.
- To be aware of improving themselves to be good teachers.
- To describe the curriculum development in relation to the health needs of the country.

The results also revealed that they needed further training to a higher degree of competence in some areas e.g. test construction, grading, item analysis, teaching skill evaluation, micro teaching, and motivation of learning, etc.

TABLE 2

STATEMENTS CONCERNING THE USEFULNESS OF THE COURSES

Topic	Medical School / $\bar{X}$			
	Rama-thibodi	Siriraj	Chula	Pra-Mongkut
1. Problem census				
1.1 Problem list	3.52	3.46	3.50	3.70
1.2 Problem solving	3.67	3.60	3.50	3.70
2. Curriculum development	3.78	4.00	3.22	3.70
3. Educational objectives	3.81	3.68	4.00	4.30
4. Cognitive learning				
4.1 Principle of learning	4.00	3.68	3.79	3.80
4.2 Evaluation	3.86	3.60	3.77	4.00
5. Psychomotor learning				
5.1 Principle of learning	3.78	4.12	3.79	4.00
5.2 Evaluation	3.77	4.04	3.83	4.00
6. Affective learning				
6.1 Principle of learning	3.80	3.32	3.48	3.70
6.2 Evaluation	3.80	3.20	3.83	3.70
7. Lesson Plan & project	4.03	4.30	-	4.20

Scale:

5 = Excellent
4 = Very Good
3 = Fair
2 = Little
1 = Very little
X = No opinion

Discussion

The workshop provided the foundation of educational principles, teaching skills, and good attitude toward the teacher. The study results showed that the clinical teachers possess the teaching competencies. However, they required additional training in specific programs directed at specific competencies such as micro teaching, evaluation, curriculum development, etc.

Eventhough no study reveals that the teachers who participated the workshop can teach more efficiently than non participative teachers. At present, some changes can be found in method of teaching, efficiently use of media, and evaluation of cognitive and clinical performance. The medical curriculum has been developed as a result of talking the same language. Fortunately, the staff development in teaching competencies somehow affects the quality of graduates.

References

1. Yonke, A.M. The art and science of clinical teaching. Med. Educ., 1979, 13, 86-90
2. Maddison, D.C. What's wrong with medical education? Med. Educ., 1978, 12, 97-102.
3. Vu, N.V. & Galofre, A. How medical students learn? J. Med. Ed., 1983, 58(8), 601-609
4. Lancaster, C.J., Mendelson, M.A, & Ross, G.R. The utilization of student instructional ratings in medical colleges. J. Med. Ed., 1979, 54(8), 657-659.
5. Masterfile of Medical Education Workshop, at Pra Mongkutkraeo Medical Academy, February 9-19, 1982.
6. Masterfile of Medical Education Workshop, at Faculty of Medicine, Chulalongkorn University, July 19-30, 1982.
7. Masterfile of Medical Education Workshop, at Faculty of Medicine, Siriraj Hospital, Mahidol University, November 8-19, 1982.
8. Masterfile of Medical Education Workshop, at Faculty of Medicine, Ramathibodi Hospital, Mahidol University, December 13-24, 1982.

TEACHER EFFECTIVENESS AND THE AFFECTIVE CHARACTERISTICS OF COLLEGE TEACHERS/MENTORS

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The purpose for the evaluation of teacher effectiveness is to hopefully improve education. By identifying what constitutes the effectiveness of teachers, we can strive toward our goal of improving education. This improvement requires us to analyze and evaluate teachers to find out who are the most effective ones, what traits or style they utilize, who are the less effective ones, and how we may improve their skills. Teacher effectiveness evaluation raises the following question: What are the criteria for teacher effectiveness?

> The ultimate purpose for evaluating teachers is to enhance student achievement. However, student gain as a single criterion is not sufficient to judge effective teaching. Multiple criteria should be simultaneously assessed that has a definite part in deciding who is effective (Ostrowski).

Many distinct aspects of teacher effectiveness must be investigated and assessments on each of these aspects made.

While many researchers (Brophy, Goodlad, et. al.) have started with students' gains, this may not be an appropriate measure because of the difficulty of equating inputs. Higher educational leaders must also be careful when evaluating research on teacher effectiveness. Much of the current teacher effectiveness research has been done at the elementary educational level and probably is not generalizable to the college and university. Thus, it is necessary to look at those materials which are available and apropos to higher education when investigating the effectiveness of teachers.

Rating the effectiveness of teachers falls into a number of categories and a vast range of criteria to be considered as valid. One valid group of criteria has been derived from research done at Iowa State University. These criteria are unique in that each item has been tested for reliability, validity and discrimination power. The items have proved adequate to discriminate between teaching of high, medium, and low effectiveness (Manatt, Palmer, and Hidlebaugh, 1976).

The Iowa State research identified five categories of effective teacher behavior: productive teaching techniques, positive interpersonal relations, organized and structured class management, intellectual stimulation, and desirable out-of-class behavior.

Numerous other criteria lists have been suggested for evaluating teacher effectiveness. Highet (1950), one of the early post-World War II investigators, believed that teachers should be evaluated on their creativity, will power, and kindness as well as memory. The Department of Health, Education and Welfare (1970), in a book entitled, Do Teachers Make a Difference, pointed out five categories of traits of an effective teacher that should be considered when evaluating them: dedication to the endurability of all children; ability to communicate; ability to motivate; ability to organize and manage a class; ability to create learning experiences.

Hastings and Schutz point out that

> the criteria used in rating teachers should encompass a large number of variables to match the wide range of techniques utilized by the teacher. An effective teacher utilizes the technique(s) that are not only best for the class but for the individual students who compose the class. He is aware of individual differences, biases and other problems that may affect learning. He seeks the means that will in the most beneficial manner achieve the proper end. Therefore, criteria used to evaluate him should include consideration of the use of the tools of an effective teacher.

Problems in establishing acceptable criteria for evaluating teachers arise because the criteria must adequately cover the social role of the teacher as well as give fair value to the teacher's personal attributes and manner of teaching. Also, the criteria must cover the functional or managerial role of the teachers, account for individual differences of teachers and students, and must be measurable and observable within a reasonable length of time.

Meeth (1976) believes the problems of establishing evaluation criteria are a result of the inability of the academic community to come to a consensus with regard to what constitutes effective teaching. He suggests that educators not only cannot come to a consensus, but do not even know what makes up effective teaching, that they have a poor research base, and don't agree on its validity. That they don't believe the evidence that does result from research, and that they don't act on the evidence in a broad systematic way throughout higher education.

This raises possibly the most important issue, what constitutes student learning, for that is the goal of our endeavors. Too often the definition of student learning involves "the ways in which people handle stimuli from the environment, organize data, sense problems, generate concepts and solutions to problems, and employ verbal and non-verbal symbols" (Doyle, p. 27). Doyle and Uranowitz investigated the likeability or rapport of teachers and its effect on learning. They concluded, "that these softer qualities are important in affective learning, and demonstrated in cognitive learning" (p. 30). The point however, is that they recognize that there exists a significant area of affective learning which information processing definitions fail to address.

Experience suggests that this affective learning is of critical import if students are to accomplish as effectively as possible the more measurable knowledge acquisition and manipulation by the human computer -- the brain. This affective area deals with, and consists of, the emotions and the internal organization of the student as they contribute to growth in the educational setting. Aspy and Roebuck (1974) hypothesized that: "People who received high levels of Empathy, Congruence, and Positive Regard would attain more growth than those who had been given low levels of them" (p. 164).

Studies of teacher's levels of facilitative interpersonal conditions and cognitive growth yielded results indicating support for the contention that "these three conditions (Empathy, Congruence, and Positive Regard) are significantly related to classroom learning" (p. 165). The teacher who effectively provides high levels of the three facilitative conditions, enhances students' cognitive growth. The teacher, on the other hand, who does not do this retards student learning. They tend to learn less than they normally would.

Crist and Achilles (1980) argue that only through a holistic approach to effective teaching can we discover "what is good teaching" and not impose a definition of "what it may be". They believe that superior teaching "may emerge from large numbers of variables interacting, not from a limited few which have been isolated to make them easier to observe" (p. 27). By examining effective teaching as isolated bits of behavior, we imply that some data about effective teaching is more valuable than is other data. By presuming to know which bits constitute effectiveness, we miss the many affective characteristics as well as other characteristics which combine as integral parts of a holistic model for effective teaching. We must be "less concerned with what is planned and designed and more intent on that which occurs without intrusion ... sensitive to the unique, spontaneous, and unexpected" (p. 27).

Four sets of competencies, described in various ways by researchers, seem to stand out when teachers, identified as excellent at the community college level, describe how they behave in various situations. According to Baker, Boggs, and Putnam (1983), these effective teachers displayed: a student-centered orientation, value for the learning process, need to influence individual behavior, and belief that they possessed the power to produce a desired effect in the learner. These four may not be all inclusive, but they are the basis for the ideal environment in which to nurture excellence -- both student and teacher. "It is the combined efforts of effective teachers and administrators that establishes an institutional environment conducive to excellence in teaching and learning" (Baker, Boggs, and Putnam, 1983, p. 29).

Student-centered teachers demonstrate positive expectations for students. They demonstrate accurate empathy through caring and compassion for the student, and a respect for students (Klemp, 1977). These teachers expect growth and success even while accepting students where they are. They also try to sell students on the positive concept that they can do it. Teachers who genuinely care for students find them willing to work hard at the tasks assigned. Lastly, but not finally, excellent teachers demonstrate a respect for the individual that students recognize as caring for them as individuals. They let students know that they, the teachers, believe the student is worthwhile and can achieve, when they decide to, despite all of their past nay-sayers.

Excellent teachers incorporate a high value for the learning process and see themselves as learners. In the non-traditional academic setting of the community college, the teacher must constantly be in the process of learning and realize that a student may have had a better experience or a more varied and valuable one than the teacher. These teachers are able to take risks, experiment, and admit mistakes, thus showing students that teachers are human.

The third area of characteristics of excellent teachers is their need to individual behavior, to create a desire to learn in students by using their knowledge about individual students, their interests and their concerns. These teachers understand that students need to have their goals linked to the path by which they will learn. They support learning by providing frequent and timely feedback which is positive and encouraging.

Ultimately, excellent teachers believe in their power to induce learning. They believe in their own efficacy. They know they can succeed and indeed find ways to be successful. This often manifests itself in seeking ways to improve. "What I enjoy most about teaching is watching my students grow and sharing their excitement in learning. That really turns me on!" (Baker, Boggs, and Putnam, 1983, p. 28). And well it should.

It is this quality of mentoring that also appears in the research of Klemp, Schneider, and Kastendick (1982). They describe it as The Balancing Act. The heart of the effective teachers' balancing act, they observed, was the ability to balance student centeredness with a firm directiveness.

They concluded that those teachers who were considered to be particularly effective in classroom teaching and one-on-one mentoring exhibited an orientation best described as student-centered. The characteristic which distinguished the effective teachers from those considered to be average was their optimism about, and affirmation of, the accomplishments of average and even exceptionally difficult students. Their expression of positive expectations was a notably powerful theme in the interviews conducted with effective teachers. The average teachers' expression of negative expectations however, was their single most dominant theme. The average teachers lacked awareness of, and responsiveness to, particular student concerns and needs. The effective teachers were more likely to remember the details of their interactions with students and to know what the outcomes of a particular situation with a student had been.

In the same way Baker, Boggs, and Putnam identified effectiveness as student oriented and the teacher having placed a value on the learning process, Klemp, Schneider, and Kastendick found effective teachers to be student-oriented, and as characterized by a pervasive conviction that learning is a highly valuable activity. Effective teachers presented themselves as learners, aligning themselves with their students in a common cause -- learning. The average faculty while often espousing an appreciation for humanistic education, never described themselves as directly engaged in learning. They taught in ways that implied their greater commitment to exposing students to subject and discipline approaches.

The effective teachers placed great emphasis on making use of their students' interests, attitudes, and experiences in the learning process. They created learning situations in which it was the student who worked through the course issues, questions, or exercises and arrived at an understanding of the learning points in question.

> The effective faculty members, in spite of some statements to the contrary, took a highly directive role in the facilitation of their students' learning. Characteristically, effective teachers began the process of identifying learning tasks by actively unearthing information about their students' learning needs and interests. But information seeking was only the beginning of a larger process. The study group members also exhibited skills in integrating disparate information about their students into diagnostic theories that, in turn, yielded prescriptions for action that would further their students' learning. One of our most striking findings was the extent to which the effective faculty members characteristically integrated all three of these competencies in their classroom teaching and mentoring. The average faculty members, by contrast, did not describe themselves as going through this three-stage process, and though they often made recommendations or gave assignments, they seldom explained how the recommendation made sense in terms of their particular students' circumstances.
>
> Effective faculty members ... promoted adult-adult interactions by speaking directly to their students' adulthood, by treating them as persons whose differences from the teachers could be measured only in terms of having less knowledge of a given subject matter. When conflicts arose between the students' external concerns and the demands of their learning, the effective teachers held their students accountable. They were persuasive and, when necessary, firm or controntive when student concerns threatened to interfere with learning. Members of the control group displayed considerably less aptitude for holding their students accountable to the learning process. Only infrequently did they find ways to show students how certain learning tasks held rewards for them and they seldom confronted students over unacceptable behaviors. Instead, the average teacher frequently chose to bend his or her own performance standards in order to dispose of a conflict. In several instances, members of the control group let students know that their work was marginal at best, but against their better judgment, passed it anyway. (Klemp, Schneider, Kastendick, 1983).

It may be these latter two characteristics of the effective teacher which are so valuable in the college setting. Students need to know that we believe fully in them; that we believe they can succeed; that we do care about them and their uniqueness. However, as child development specialists have pointed out, caring is not often associated with permissiveness. Firm directiveness and truly high expectations of students often is translated by students into a belief that effective teachers truly care about learning, about them, and as their mentor, about their success.

The issue then may be how to incorporate utilization of these characteristics into teaching methodology. Irwin Sayer (1972) concluded that, "no clear patterns have emerged which favour any specific methods of instruction" (p. 530) at the college level in order to improve achievement. However, as Klemp, Schneider, and Kastendick described above, the affective environmental issues are of primary importance to effective teaching at this level. Thus, Sayer's results make sense. It is not the method, within reason, which determines effective teaching and student success, but the affective environment created that nurtures success from whatever method the teacher feels most comfortable using. Certainly apparent success occurs from environments which reflect the characteristics of negativism and fear. However, one wonders what kind of learning takes place, how long it lasts, and what student types do succeed, not because of personal failure, but because of the environment.

Donald Medley concludes that,

> One largely unanswered question about the nature of teacher effectiveness is whether a teacher who is effective in producing one kind of gains with one kind of pupil may also be expected to be equally effective in producing other kinds of gains with other kinds of pupils. Is teacher effectiveness general or specific to the kind of pupil taught and the kind of outcome measured? (p. 18)

This is a legitimate area of concern. However, when we understand that affective characteristics constitute significant influence on student success, then we can answer Medley's question; teaching effectiveness can be generalized when a nurturing environment has been established.

Aspy, David and Roebuck, Flora. "From Human Ideas to Human Technology and Back Again Many Times", *Education*, Winter, 1974.

Baker, George; Boggs, George; Putnam, Scottie. "Ideal Environment Nurtures Excellence", *Community and Junior College Journal*, October, 1983.

Crist, Michael and Achilles, C.M. "The Assessment of College Teaching", *National Forum*, Spring, 1980.

Doyle, Kenneth. *Evaluating Teaching*. Lexington, Mass.: D.C. Heath, 1983.

Hastings, Geraldine and Schultz, Ann. *Techniques for Effective Teaching*. Washington, D.C.: Department of Home Economics, National Education Association, n.d.

Highet, Gilbert. *The Art of Teaching*. New York: Alfred A. Knopf, 1950.

Klemp, George. "Three Factors of Success", *Relating Work and Education, Current Issues in Higher Education*. San Francisco: Jossey-Bass, 1977.

Klemp, George; Schneider, Carol; Kastendick, Susan. "The Balancing Act: Competencies of Effective Teachers and Mentors". Office of Continuing Education, University of Chicago, Chicago, 1982.

________. "The Balancing Act: Competencies of Effective Teachers and Mentors", *Innovation Abstracts*, February 11, 1983.

Manatt, Richard P; Palmer, K.F. and Hidlebaugh, E. "Teacher Performance Evaluation with Improved Rating Scales," NASSP *Bulletin*, exp. Fall 1976, 7 pp.

Mathis, B. Claude. *Evaluating the Effectiveness of Teaching. New Directions for Program Evaluation: Measuring the Hard-to-Measure*. San Francisco: Jossey-Bass, 1980.

Medley, Donald. "Research In Teacher Effectiveness - Where It Is and How It Got There." Manuscript for book to be published by The National Society for the Study of Education.

Meeth, Rochard. "The Stateless Art of Teaching Evaluation." *Change Report on Teaching 2*. New Rochelle, New York: Educational Change Inc., 1976.

Ostrowski, Michael V. *A Comparison of Grades Students Achieved at William Rainey Hoper College (Ill.) and How They Rate The Effectiveness of Their Instructor of Midterm, During the Spring of 1975 Semester*, ERIC File ED 110113.

Sayer, Irwon; Campbell, James Reed; Barns, Cyrus. "The Effect of College Instructor's Interaction Ratios on Cognitive Development", *Science Education*, 56:4, 1972.

U.S. Office of Education. *Do Teachers Make a Difference*. Washington, D.C.: U.S. Government Printing Office, 1970.

HOW DO GTAs LEARN TO TEACH?:

SOME EMPIRICAL FINDINGS

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Much recent work (Baldwin & Blackburn, 1981; Cytrynbaum, Lee, & Wadner, 1982) has been done on the stages of development through which teachers pass in the course of their careers, but little research appears to be available on conceptualizations about teaching that graduate students bring with them as they begin their careers as teachers. Many studies note that college teachers receive little or no formal training in teaching. The typical beginning experience, usually as a graduate teaching assistant, is that of being "assigned to a class, handed a textbook, and told,in essence, if not in fact, 'go jump into that classroom and sink or swim'" (Garland, 1983, p 428).

This lack of formal training in teaching raises a number of questions: What resources do graduate teaching assistants draw upon as they present themselves in the role of teacher for the first time? How do they determine how well they are doing their jobs as GTAs? How do they settle upon a particular style of teaching?

Traditional answers to questions such as these focus upon the concepts of professionalization and occupational socialization. These explanations assume the presence of "role models" (Bragg, 1976), and attach high importance to such figures. In this view, teachers learn to teach primarily by emulating the teachers they have admired.

THREE AREAS FOR INQUIRY

With regard to the influence of previous experience, we offer new evidence that graduate teaching assistants draw upon sources other than role models in determining their strategies as teachers. We will show that teaching strategies employed by GTAs are in part applications of skills learned in settings related to, but not necessarily identical to, college teaching.

Second, our data illustrate how GTAs modify their teaching strategies by attending to student feedback. By "student feedback" we refer to such things as in-class student participation, attentiveness, and comments to the instructor, rather than to formal end-of-term student evaluations of the instructor.

Finally, we ask what factors enter into the development of a teaching "style"? Granrose (1980) elucidates a set of basic skills (choosing, preparing, speaking, listening, responding, testing, grading) which form the basis of teaching and which "help create a teacher's style." But, according to Granrose, "they do not define style nor do they play the crucial part in developing a style" (1980, p 27-28). In other words, style is not piecing together a few techniques from here and some helpful hints from there; instead style results from the development of a certain "wholeness of character" which is reflected in an attitude of "love and respect" for one's students. This "wholeness of character," Granrose goes on, is manifested in being "comfortable" as one teaches, and in spreading this sense of comfort among students. Our GTAs, in describing their styles, emphasize traits which contribute to the cultivation of a positive classroom atmosphere.

AN INTERVIEW STUDY

Our data come from a study, conducted in the Spring of 1983, in which 26 graduate teaching assistants in seven departments at a large midwestern research university talked at length about their views on teaching and learning. GTAs from departments of Mathematics, Chemistry, Political Science, English, Sociology, Philosophy, and Economics were asked open-ended questions about (1)their experiences prior to becoming a GTA, (2)how they evaluate the success of particular class sessions, and (3) their teaching styles.

RESULTS AND DISCUSSION

Prior Experiences

Experiences that GTAs felt could be brought to bear upon teaching show considerable diversity. Not surprisingly, many GTAs (about a third) drew upon previous undergraduate TA experiences or previous tutoring experiences. Some GTAs mentioned having previously taught in college or at another level of education.

Previous opportunities to perform or talk to groups helped another quarter deal with teaching for the first time. One person led small groups in seminary; another mentioned performing on stage in a band and in plays; a third was a member of a debate society. According to the GTAs, these activities helped them develop such transferrable skills as "self-expression," "public speaking," and "learning to listen." For example, one GTA pointed out that performing in a band or a play gradually helped him overcome his shyness; the confidence he gained as a performer was useful to him as a teacher.

Previous job-related experiences, such as retail management, customer service, and editing were mentioned nearly as often. Jobs like these are similar to teaching in certain respects. Both retail management and teaching require effective interpersonal relations skills. In customer service, it is often necessary to "reshape the way the customer thinks about the kind of service he's looking for," and editors must cultivate the art of "tactfully" commenting on another's work.

Two GTAs simply reported they had "grown up in an academic environment," since their parents were teachers at one level or another. One GTA said that counseling courses helped prepare him to deal with teaching. Considering the thrust of the socialization literature cited above, it is rather surprising that only two GTAs mentioned that their experiences as students under different teachers and GTAs influenced how they tackled the job of teaching.

Finally, both Army and coaching experiences assisted several GTAs in their first time teaching. Army veterans said they picked up skills from instructing subordinates in both classroom and non-classroom settings (drilling troops, and the like). One of the coaches, a tennis coach, stated that helping people "image" successful performances was a technique he brought from the tennis court to teaching.

Indicators of Success

We asked GTAs to discuss how they determine whether a particular class has been successful or unsuccessful. We imagined responses such as getting all of the material covered that I had planned to cover, delivering the material without getting stumped along the way, quality of classroom discussion, and so on. What we found was an overwhelming consensus that classroom success or failure was based upon student participation and enthusiasm in class. This result held true even across disciplines; it was just as germane to Math and Chemistry GTAs as to English and Political Science GTAs.

Some examples: three of four Math GTAs referred to student feedback as most important in evaluating success: "student response is the most important thing," "the way they are looking at you," "whether I see long faces, or baffled looks." Among Chemistry GTAs, three of five emphasized feedback: "student participation," "whether students rush to get out when class is over," "whether the questions they ask have been intelligent, and show they have synthesized the material."

English and Political Science GTAs answered this question more elaborately, but drew the same conclusions: eight of nine in these two departments gave primacy to student feedback in assessing the success of a particular class. "I would say that the blank look, the blank stare, is a pretty good gauge, an indication that the class has not been successful. Now if students are nodding vigorously or shaking their heads furiously, either of those reactions, I don't mind at all, because it means they will go and think about [the issues raised in class]." " You could almost statistically show that the greater proportion of student participation and the less lecturing I've done, the more successful I thought the section was." "The most important criterion is the enthusiasm that the students leave with, because a really successful class is the kind where I have to stop them talking [five minutes after the section is over] because I've got to go to my next section."

Teaching Style

For many GTAs, our interview was the first time they had ever been asked to describe their teaching "style." We found that after a bit of coaxing (e.g., prompts such as "can you think of any adjectives that might describe the way you teach?"), most GTAs were able to settle on at least a two or three word description of their teaching.

GTAs appear to be aware of the potential impact of "style" upon classroom atmosphere. In particular, they seem to be concerned with creating a "comfortable" climate in which to interact with students. Half of the GTAs characterized their style, in part at least, as either "humorous" or "relaxed," certainly two strategies conducive to the development of a sense of "comfort" in the classroom. About a quarter of the GTAs characterized their styles in non-"comfort-making" terms. Two of them, however, described their style as "cajoling students to engage in discussion," which, if not exactly comfort-making, could arguably be considered student-centered. The other quarter were unable to describe themselves in terms of a teaching style; most of them remarked that they really "hadn't ever thought about it."

CONCLUSIONS AND IMPLICATIONS

Our interviews were exploratory and few in number, so the findings are not conclusive. However, some tentative implications for intervention and guidance strategies emerge from this study.

First, to the extent that GTAs draw upon past experiences in coming to grips with teaching for the first time, it is important that supervisors, counselors, and others interested in the development of GTAs recognize connections that exist between teaching and previous experiences. A formal analysis of "transferability," in the sense that this term is used in research on learning (Gagne, 1975), may be a useful exercise. If aspects of previous experience most likely to transfer to teaching are made explicit, GTAs can approach their new responsibilities with some assurance that they already possess skills needed to do an effective job.

Second, it is important to recognize that learning is contingent upon feedback from "role clarifiers," which for beginning teachers include not only role models, but other faculty, peers, and, as we have found, student subordinates (Leslie, Swiren, and Flexner, 1977). Additionally, learning any new skill depends upon perception of the consequences of one's performance (Rotem, 1978). For new teachers, the clearest and most immediate consequences of performance are the expressions on the faces of students during class. Those who provide guidance to GTAs, however, may wish also to emphasize other indicators of classroom success, some of which are less immediate (e.g., test scores, end-of-term evaluations, and so on).

Third, GTAs can be made aware of the potential impact of particular styles upon classroom atmosphere. Jeremy Bentham is quoted by Granrose (1980) as stating that "the way to be comfortable is to make others comfortable, the way to make others comfortable is to appear to love them, and the way to appear to love them is to love them in reality. Something like this," Granrose continues, "is a necessary part of the best teaching" (1980, p 29). If this is true, then the cultivation of styles which further this aim is crucial.

Fourth, the GTA experience appears to be a time in which one's philosophy and approach to teaching are highly tentative. The potential for successful intervention is great. Given the present lack of formal training of GTAs during this time of uncertainty about values, assumptions, and techniques, it appears that significant opportunities for guidance are being lost.

For GTAs, learning to teach is a dynamic process involving transferrable prior learnings, in-class feedback from students, and the creation of classroom "comfort." We do not imply that this is all that goes into the development of teaching strategies. Others have commented, in particular, upon the importance of role models, colleagues, and the structure of the academic reward system (see, for example, Eble, 1971, 1983). Our findings supplement these other understandings of the process by which GTAs learn to teach.

REFERENCES

Baldwin, R., & Blackburn, R., The academic career as a developmental process: Implications for higher education. *Journal of Higher Education*, 1981, *52*, 598-614.

Bragg, A., *The socialization process in higher education.* Washington, DC: ERIC/AAHE Research Report #7, 1976.

Cytrynbaum, C., Lee, S., & Wadner, D., Faculty development through the life course, *Journal of Instructional Development*, 1982, *5*, 11-22.

Eble, K., *The aims of college teaching*. San Francisco: Jossey-Bass, 1983.

Eble, K., *Career development of the effective college teacher.* Washington, DC: American Association of University Professors, 1971.

Gagne, R., *Essentials of learning for instruction.* New York: Holt, Rinehart, and Winston, 1974.

Garland, T., A training program for graduate TAs: The experiences of one department. *Teaching Sociology*, 1983, *10*, 487-504.

Granrose, J., Conscious teaching: Helping assistants develop teaching styles. *New Directions for Teaching and Learning: Improving Teaching Styles*, 1980, Number 1, 21-31.

Leslie, L., Swiren, J., & Flexner, H., Faculty socialization and instructional productivity. *Research in Higher Education*, 1977, *7*, 127-143.

Rotem, A., Effects of feedback from students to university instructors: An experimental study, *Research in Higher Education*, 1978, *9*, 303-318.

IMPEDIMENTS TO GRADUATE TEACHING ASSISTANTS' EFFECTIVENESS: AN ATTRIBUTIONAL ANALYSIS

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Most research about college and university teaching has dealt with student evaluations of teachers (e.g., Overall and Marsh, 1982) and with the effectiveness of specific instructional methods (e.g., Kulik, Kulik, & Cohen, 1980). Less is known about how members of the teaching professions themselves view the teaching-learning process.

A great deal of undergraduate teaching at colleges and universities is done by graduate teaching assistants (GTAs). The GTA experience is the only teaching experience most graduate students will have before becoming faculty members. This paper describes a study of how GTAs think about and approach teaching.

Attribution Theory

Attribution theory rests on the notion that people actively attempt to understand causes of certain events. For example, "Why did I get a D on this exam?" "Why doesn't Mary like me?" "Why did I get that promotion?" According to Weiner (1976, 1979), there are four categories of causal attribution: ability, effort, task difficulty, and luck. These attributions are perceived by individuals as a) either stable or unstable (likely or unlikely to change); b) either external or internal to the individual; and c) either controllable or not controllable by the individual.

Affective reactions and affective anticipations depend on how causes are perceived by the individual. Weiner mentions three areas that affective reactions influence: persistance of behavior, choice, and approach or avoidance of tasks and other people. For example, he hypothesizes that individuals who perceive a cause to be controllable and unstable (changeable) will probably try to alter the situation. On the other hand, individuals perceiving a cause as uncontrollable and stable are unlikely to attempt to change the situation. Thus, as Smith and Geis (1980) and Geis and Smith (1979) note, faculty members are more apt to attempt to change components of their teaching which they perceive to be unstable and within their control. If faculty members feel they have control over the component they may experience guilt and "devote time and energy to working on improving the situation" (1980, p 7).

A Study of Graduate Teaching Assistants

Participants

We interviewed twenty-six GTAs from seven departments at a private midwestern research institution. GTAs from Mathematics, Chemistry, Political Science, English, Sociology, Philosophy, and Economics were asked, among other questions, to discuss what impeded their effectiveness as teachers. They were asked to rate each item mentioned on three six-point scales: stability, i.e., likely (0) or unlikely (6) to change; difficulty, i.e., easy (0) or hard (6) to change; and, controllablity, i.e., not under control (0) or under control (6) of the GTA.

Anticipated Results

We expected each impediment to be oriented to one of four areas: to the task of teaching, to students, to GTAs themselves, or to the supervising professor. We anticipated that GTAs with greater experience would mention different impediments and more impediments than GTAs with little or no experience. We also expected that GTAs within a particular department would mention similar impediments.

Finally, comparing professors' responses (Geis and Smith, 1979; Smith and Geis, 1980) GTA responses, we anticipated differences in the orientation of impediments due to faculty members' experience and teaching responsibilities.

Findings

Impediments to Teaching Effectiveness

GTAs mentioned twenty different impediments to their effectiveness as teachers. (A complete list appears in Table 1.) Two GTAs mentioned no impediments. These GTAs felt nothing impeded their effectiveness as teachers. As a Math GTA said, "I'm doing as well now [as a teacher] as I ever will."

The impediment most often mentioned was lack of time. Twelve of the twenty six GTAs (46%), at least one from each department, mentioned lack of time. For our respondents lack of time meant "not having enough time for class preparation" and "a lack of time to do my own classwork and the work necessary for teaching." Most GTAs viewed lack of time as a factor that was not in their control and was both difficult and unlikely to change (stable). For some GTAs having ample time was a vital component for being both a good graduate student and teacher. For example, one Philosophy GTA said, "If I had more time I could be a better teacher."

Lack of knowledge of subject matter was the impediment mentioned next most often. Of the six who mentioned this item, half were Chemistry GTAs and others were GTAs in Math, English, and Political Science. By and large, these GTAs indicated that a better understanding of the subject matter would improve their teaching. Lack of knowledge was viewed as in control, easy and likely to change.

The third most often mentioned impediment was lack of experience as teachers. Four GTAs listed this impediment. Three of the four were GTAs in the English department (the other was a Math GTA). Those who mentioned this impediment felt that their experience level was going to change, although it was something they did not control.

No other impediments were listed by more than three GTAs (see Table 1).

Orientation of Impediments

As expected, impediments could be categorized in terms of their orientation toward the task of teaching, toward students, toward supervising professors, or toward the GTA (self). GTAs most often mentioned impediments which were oriented to the task of teaching: e.g., lack of time for teaching, more teaching experience, and increased knowledge of the subject matter (about fifty percent of all those mentioned). Impediments oriented to self and students were mentioned by GTAs about half as often as those concerned with the task of teaching. Least frequent were impediments having to do with the supervising professor. (Each impediment is coded by orientation in Table 1.)

Impediments by Field

We assumed that GTAs within departments would have similar experiences and would list many of the same impediments. Greatest agreement within department occured regarding lack of time, which was mentioned by most GTAs in Math, English, Chemistry, Political Science, and Economics. Regarding knowledge of material, agreement within department was found among Chemistry GTAs. English GTAs agreed regarding more teaching experience. Other than the above, there was little agreement within departments.

Impediments by Experience

We found little difference in the types of impediments mentioned by GTAs across levels of experience. More experienced GTAs differed from others only in that they provided a longer and more varied list of impediments

English GTAs, the most experienced in the sample, mentioned the need for additional teaching experience more often than did others. It is interesting that having had some experience seems to make salient the need for more experience.

Discussion

Attributional Analysis

GTAs mentioned several impediments which were out of their control, stable (not likely to change), and difficult to change. (See summary ratings in Table 1.) These include lack of time, lack of control over material presented, and lack of direction from supervising professor. Each of these, according to GTAs, were controlled by supervising professors or other faculty members. They were also seen as hard to change. Attribution theory predicts that GTAs will attempt little change in these areas.

GTAs also mentioned impediments which were in their control, likely to change, and easy to change. These include knowledge of material, ability to think on feet, ability to motivate students, planning, and determining the degree of familiarity with students. Attribution theory predicts that GTAs will attempt change in these areas.

Comparison with Professors

We can now compare these results with Smith and Geis' study of professors. Smith and Geis (1980) and Geis and Smith (1979) found when professors discussed pedagogy they centered on themselves and their subject matter. Likewise, our GTAs discussed impediments related to themselves and to teaching tasks. Both professors and GTAs were primarily concerned with the lack of time for teaching and research.

A major difference between GTAs and professors was GTAs' empathy with undergraduates. One fourth of the impediments mentioned by GTAs were oriented towards students; about one third of the GTAs mentioned at least one student-oriented impediment. Geis and Smith, on the other hand, report, "Some professors focus soley on themselves in the teaching/learning process. They repeatedly discuss what they do in class with no reference to students" (1979, p 8).

Smith and Geis also report that professors most often mentioned impediments which they saw as out of their control and unlikely to change. GTAs reported some impediments as out of their control and unlikly to change, but nearly half were considered in control and likely to change.

Conclusions and Implications

1) We found as much similarity in GTA responses across departments as within departments. If replicated with larger numbers, this implies that some GTA needs can be met through university-wide programs.

2) An overriding impediment to teaching effectiveness is lack of time. This may in turn be the major impediment for GTAs to attend seminars about teaching. GTAs may be no more likely than professors to attend, unless it can be shown that the seminars will help them become more efficient.

3) A number of impediments were rated as controllable and easy to change. Programs for GTAs may find it most effective to direct their energies towards these areas.

4) Some impediments were rated as uncontrollable and hard to change. Seminars aimed at understanding the development of these perceptions by GTAs may help them see the impediment as more controllable and changeable.

5) The interviewing process is itself an intervention. Documenting GTAs' perceived impediments on a campus not only provides useful information for designing programs but also demonstrates concern for GTAs and their teaching.

References

Geis, G. L., & Smith, R. *Professors' perceptions of teaching and learning: Implications for faculty development.* Paper presented at the Meeting of the American Educational Research Association, San Francisco, 1979.

Kulik, C. L. C., Kulik, J. A., & Cohen, P. A. Instructional technology and college teaching. *Teaching of Psychology*, 1980, *7*, 199-205.

Overall, J. U. IV, & Marsh, H. W. Students' evaluations of teaching: An update. *AAHE Bullein*, 1982, (December), 9-13.

Smith, R., & Geis, G. L. *Professors' views of teaching and improvement.*. Paper presented at the CSSE Meetings, Montreal, 1980.

Weiner, B. An attributional approach for educational psychology. *Review of Research in Education*. 1976, *4*, 199-209.

Weiner, B. A theory of motivation for some classroom experiences. *Journal of Educational Psychology*, 1979, *71*, 2-25.

Table 1. Impediments to Teaching Mentioned By GTAs

Impediments	Total (n=26)	Math (n=4)	English (n=5)	Chemistry (n=5)	Poli Sci (n=4)	Philosophy (n=2)	Economics (n=3)	Sociology (n=3)	Attributions[3] Stable Low[2]	 Stable Medium[2]	 Stable High[2]	 Difficult Low	 Difficult Medium	 Difficult High	 Controllable Low	 Controllable Medium	 Controllable High
Lack Of Time (TT[1])	12	1	2	3	2	1	2	1	1	1	9		2	9	9	2	
Knowledge Of Material (TT)	6	1	1	3	1				6			4	2		6		
More Experience (TT)	4	1	3						3			1		2	2	1	
Personality (SE)	3	2	1						1	1	1		1	2	1	1	1
Class Size (TT)	3			1			2		1					1	3		
Relax When Teaching (SE)	2		1	1					2			1	1			2	
Layout Of Classroom (TT)	2		1				1		1			1				1	
Ability To Think On Feet (SE)	2		1			1			1			1					1
No Control Over Material (TT)	2		1		1						2			2	1		1
Meeting Students' Needs (ST)	2			1	1				2				1	1		1	1
Students Poorly Prepared (ST)	2			1			1		1					1	1	1	
Problem Students (ST)	2		1				1			1			1				1
No Direction From Prof. (SP)	2							2			2			2	1	1	
Knowing Too Much (SE)	1	1								1				1			1
Motivating Students (ST)	1	1							1				1				1
Poor Planning (TT)	1		1						1				1				1
Familiarity With Students (ST)	1		1						1				1				1
Structure Of Lab (TT)	1			1													
Time Of Day Class Meets (TT)	1						1								1		
Poor Presentation (TT)	1						1							1			1

[1] TT-task of teaching
ST-student
SE-self
SP-supervising professor

[2] Low=0-2.5
Medium=2.5-3.5
High=3.5-6

[3] Not all respondents rated each impediment on all attributions and so the number of responses varies.

ESTABLISHING PROBLEM PRIORITIES IN DIAGNOSTIC COURSE EVALUATION

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When faced with the findings of a course evaluation, it is often difficult to decide which of the indicated problem areas should be tackled first. Too often the data are inadequate to identify real difficulties, much less to establish priorities for action. Regardless of the type of evaluation methodology used, there are likely to be people who disagree with what the results mean, and there is frequently uncertainty as to what to do about them.

This uncertainty is considerably lessened if a 'diagnostic' evaluation is performed, as opposed to the type of evaluation which attempts to make measurements on predetermined scales. A diagnostic evaluation aims to elicit descriptions of learning difficulties that course participants have experienced on the course.

One type of diagnostic evaluation instrument[1] that has been favoured at the University of Cape Town for some years consists of two sequential stages. In the first stage, respondents are required to identify from a given list of course elements, those with which they experienced difficulties. Then, in the second stage, respondents are asked to describe (in writing) the nature of the more serious difficulties they have identified.

The findings of such an evaluation would comprise two sets of data. The first of these is a purely numerical table showing the percentage of the class who indicated that they had experienced a difficulty with any given course element. Until recently this percentage (which I will call the PID : Percentage Indicating Difficulties) had been regarded as a useful indicator of the relative rank of reported difficulties. Once the priority of problem areas had been established according to the PID, the relevant written comments from stage two were summarised by the evaluator. This summary formed the second set of data and was instrumental in subsequent course improvement discussions.

On a number of occasions, however, it had been observed that certain difficulties which had given rise to large values of PID, had turned out to be relatively minor. The question arose: was the PID a valid indicator of problem priority? I suspected not - but then what factor *could* be relied upon to determine the priority of reported difficulties?

Other practitioners have grappled with this issue. It is widely appreciated that not all the items in a 'measurement' type of evaluation instrument are equally important. Some evaluators have attempted to make allowance for the differing importance of items by providing for each item an accompanying scale on which the respondent is asked to *rate* the importance of that item to the course[2].

This begs a further question: *are* students really competent to rate the relative importance of course elements in a given course? There may well be elements which have been included in an instrument for very good reasons which the students cannot be expected to appreciate until some future date. And what is the course developer to do if his own ranking of the importance of elements disagrees with that of the student body?

My approach to ranking the importance of reported difficulties was this : a problem is a problem because it impedes the learning of students. If I could establish some measure of the extent to which a reported difficulty is seen to impede learning, I would have a useful index of problem priority. So I included a third stage in the instrument, aimed at establishing the extent to which respondents viewed each reported difficulty as impeding their learning. (See the Appendix for an abridged version of this instrument.) To simplify processing, respondents were asked to classify each difficulty that they had described according to a given code, namely:

A = A major problem to me: I found it seriously impeded my ability to benefit from the course.

B = A substantial problem but one which I was able to overcome.

C = A minor problem, but life would be easier without it.

Then I developed an index which I called the Apparent Problem Magnitude (APM) which is a single number conveying the extent to which the whole class feels a given difficulty impeded its learning. This index is derived from the numbers of written problem descriptions which arose in stage two and the type of classifications (A, B or C) accorded to these problems by the students, as follows:

> The APM of a given problem is defined to be the product of two factors: the "apparent intensity" of the problem and

the "spread" of the problem. The "apparent intensity" of a problem is the weighted average of all the respondents' classifications of that problem. A simple integral weighting procedure was adopted, as follows :

A (most serious) : 3
B (significant) : 2
C (minor) : 1

Thus, if n_A = the number of written problem descriptions classified 'A', etc., then "APPARENT INTENSITY"

$$= \frac{3n_A + 2n_B + n_C}{n_A + n_B + n_C}$$

The second factor in the calculation of the APM is the "spread" of the problem, which is defined to be the fraction of the class which actually furnished written problem descriptions. (Whether or not they classified them.) If N/C stands for not classified, and N the total number of respondents, then "SPREAD" OF PROBLEM

$$= \frac{n_A + n_B + n_C + n_{N/C}}{N}$$

The APM of a given difficulty, calculated from the above two factors, is thus a number from 0 to 3. An APM = 0 means that no-one reported difficulties with that element. An APM = 3 means that every single respondent not only described a difficulty with that element, but also classified it as being a major obstacle to his or her learning.

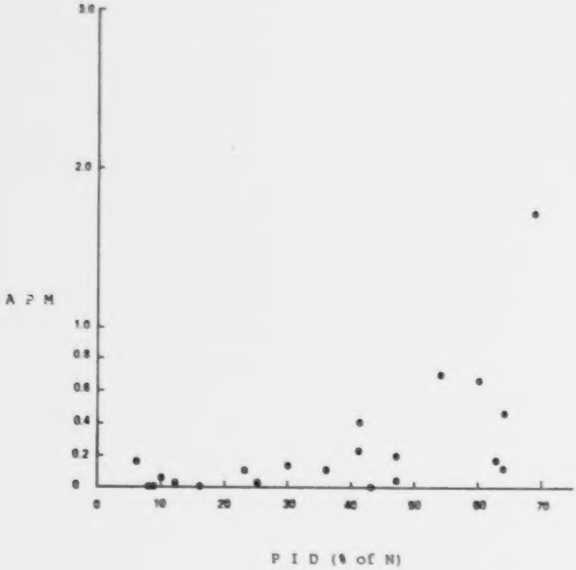
The table below shows some APM values and their equivalents :

APM VALUE	EQUIVALENT TO THE FOLLOWING PERCENTAGES OF N DESCRIBING AND CLASSIFYING:				
	C's		B's		A's
0	0	or	0	or	0
1	100	or	50	or	33
2	-	or	100	or	67
3	-		-		100

Clearly each APM value can be related to an equivalent seriousness of a problem to the class as a whole. Thus APM values are useful for accurate ranking of difficulties.

An experiment was performed to investigate the relationship between the APM and the previously used ranking indicator, the PID. This was done using a routine evaluation of a third-year Medical undergraduate course at the University of Cape Town, involving 156 respondents (of a class of 180). Both the PID and the APM for each of 23 course elements were obtained from the responses of the same sample of respondents.

The graph shows the resulting scatter diagram of the APM vs the PID -



While there is some positive correlation between the PID and the APM (ρ = +0,670), there is a very wide scatter - so much so that it would be unwise to assume that PID values can be relied upon to predict corresponding APM values. Thus a given problem cannot be viewed as a major inhibitor of learning just because a large percentage of the class identifies it as a problem.

In a course with very few difficulties, that problem which is most prevalent will be widely identified but it may turn out to be relatively minor. If it is, it will have a low APM and its significance can be seen in perspective.

Within the realm of the assumptions which surround it, the APM is a measure that has a one-to-one correspondence with perceived problem severity. It is thus useful not only for ranking problems, but for heralding the point at which a problem is severe enough to warrant attention. Any predetermined value of APM can be used as an alarm point. It has been found useful to establish a cut-off point which coincides with an APM value of 0,4. This is equivalent to 20% of the class having a 'substantial' difficulty with an item (i.e. classifying it 'B'). Using this guideline (which is arbitrary within a given institutional context) only problems with an APM of 0,4 or more would be considered severe enough to warrant further investigation, possibly leading to corrective action.

It must be stressed that the establishment of apparent problem magnitudes, leading to the choice of priorities, is only the first outcome of an evaluation. The APM is not an absolute measure of anything. In fact its only incontrovertible usefulness is as a means of establishing a finite agenda for a meeting between course developers and representatives of the respondents. At a meeting of this nature each priority item is discussed against a background of the supporting written data from the evaluation. The viewpoints of participants can illuminate the picture which is presented by the evaluation findings, and can temper decisions which may result.

The APM index might also be useful in the longitudinal comparison of course evaluation findings for successive offerings of a given course. Provided that consecutive classes are reasonably consistent in size and academic capability, there seems to be no reason why the APMs from their evaluations could not be compared to determine whether intended change has indeed been felt.

After all, if the underlying motivation for evaluating courses is a desire to improve them, it would be a decided advantage to have some measure of whether improvement is actually occurring. If it is accepted that the diminution of perceived learning difficulties constitutes improvement, then such a measure might well take the form of the APM index as described in this paper.

* * * * *

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[1] This instrument is described in detail in Meyer, J.H.F. and Veenstra, A. Teaching Bread and Butter - A practical guide to effective teaching and learning. McGraw-Hill, Johannesburg, 1980, p22.

[2] Schwier, 1982 : "Design and Use of Student Evaluation Instruments in Instructional Development": Journal of Instructional Development 1982, 5,4 pp31,32.

APPENDIX: ABRIDGED VERSION OF THE COURSE EVALUATION INSTRUMENT USED.

STAGE 1

Please read the list of items below. For each one, identify how you felt about it by writing one (and only one) of the following numbers in the box to the right of the item :

... If you liked the item or thought it good, write a 1

... If you found it satisfactory, write a 2

... If you experienced difficulties with the item, write a ... 3

('Difficulties' can mean anything which made your learning experience less than satisfactory.)

If an item does not apply to your course, leave the box blank.

* * *

1. The adequacy of your prior knowledge ______________________ ☐

2. The extent to which the course objectives were made clear to you ______ ☐

3. The relevance of the subject matter to your own personal expectations __ ☐

4. The level at which the course was pitched ____________________ ☐

5. The amount of material contained in the course ________________ ☐

6. The amount you learned from the lectures _____________________ ☐

7. The amount you learned from note-taking ______________________ ☐

8. The amount you learned from tutorials ________________________ ☐

.

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.

.

23. The attitude of the teaching staff towards you _______________ ☐

STAGE 2

Have you written any 3's in Stage 1, indicating a problem area?

If so - a) Select a maximum of three - those which caused the greatest difficulties,

and

b) for each one of these, fill in one division below, as follows -

Write here the item number which appears to the LEFT of the item in Stage 1

Describe the difficulty here, plus a remedy if you have one.

Item No. ☐

Item No. ☐

Item No. ☐

STAGE 3

Classify the seriousness of each difficulty with a rating of A, B or C as explained here -

A = A major problem to me: I found it seriously impeded my ability to benefit from the course.

B = A substantial problem but one which I was able to overcome.

C = A minor problem, but life would be easier without it.

WRITE YOUR A, B OR C IN THIS BOX

ACADEMIC ADMINISTRATORS: ROAD BLOCKS OR BUILDING BLOCKS?

WEDNESDAY, 4 JULY

1600 - 1730

ROLES OF ACADEMIC DEPARTMENT CHAIRPERSONS AT THE UNIVERSITY LEVEL - PERCEPTIONS AND SATISFACTION

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University of Haifa

Higher education is characterized by an increase in size and complexity by a multiplicity of functions and roles. Consequently, it has become a matter of great concern both with people who are directly involved and with the community at large (Unesco 1976, Cherych and Furth 1972). This concern may also be well understood in view of the growing demands for academic excellence, for creating and dissemination of knowledge on the one hand and budgetal constraints on the other. This problem, among others, has been the incentive for the vast amount of research studies that has been carried out in the area of higher education. The majority of research studies deals with issues of student learning, of instruction and of management. Students and instructors constitute the higher education population that is most extensively studied.

Interestingly enough, chairpersons of academic departments, a population highly involved in problems of higher education, has not been given the proper attention in educational research, as it might be expected considering the important roles they play in staff recruitment and tenure, in curriculum planning and teaching in department policy-making. This group of people is unique in that they usually received their education in one of the disciplines which they teach and study, however they act in the area of administration, either by appointment or by election, either part of full-time, an area for which they usualy got no training. This is but one characteristic of the chairperson position that makes the role problematic.

Other characteristics that may result in conflict are the dual loyalty to external groups - various officers in the larger community of the institution - and to internal groups - students and instructors. The interests of these two groups do not always go in the same direction. Furthermore, departmental chairpersons are academicians, implying identity with their discipline and research, their role however, requires the devotion of a large part of their time to administration at the expense of their professional work, another possible cause for inner conflicts. Discussion with chairpersons very often point to dissatisfaction to ambiguities in decision - making and role perceptions. In view of the above and since this population plays an important role in the accomplishment of university goals (Heimler 1967, Mc Laughlin et al, 1975, Roach 1976), it appears necessary to first of all investigate the role perceptions of departmental chairperson. Such information may then serve as basis for further research regarding various issues, such as the congruity of these perceptions with those of instructors and students, the antecedents - personal or environmental - of these perceptions, etc.

This study presents an attempt at relating to several questions:

- What are the role components as perceived by departmental chairpersons?
- To what extent are these role components actually fulfilled and to what extent is this fulfillment desired? Are the actual and desired role fulfillment congruent with each other?
- Is the fulfillment of the various role component related to job satisfaction?

METHOD

The study population consisted of 90 Deans and depermental chairpersons in six universities in Israel and which in the case encompass all the universities in this country.

Instrumentation: Subjects were administered a questionnaire especially developed for this study in the following manner: A group of twenty professors acting as chairpersons of academic departments were interviewed and asked to freely relate to the role they fulfill. After a period of about five minutes of such free relation, they were asked more specific questions in order to clarify issues that needed further elaboration. The interviews were protocoled and content-analyzed. Content analysis yielded 40 perceived subroles. These were phrased in items and cast into a Likert-type scale. In order to validate this list of items, the scale was administered to another group of 20 chairpersons covering various faculties. This time subjects were asked to indicate the extent to which each item describes a characteristic role of departmental chairperson. Twenty nine items out of the original forty reached 80% of agreement and were thus included in the final questionnaire. One item pertaining to satisfaction was added to constitute a dependent variable.

Respondents were asked to related to the first twenty-nine items twice: once in terms of fulfillment ("to what extent do you actually fulfill each of the following roles?") and once in terms of desirability ("to what extent would you like to fulfill each of the following roles?")

Data analysis included factor analysis, a series of t-test and correlations.

RESULTS

Factor analysis yielded four factors accounting for 72.4% of the total variances in the following order: Curriculum and Instruction; Initiative; Deparmental Status; Administration.

Insert Table 1 about here

Analysis of the comparison between actual "and desired" fulfillment of the subroles points to several significant differences.

Factor scores of Curriculum and Instruction yielded statistically significant negative t-values, implying that chairpersons do not fulfill this role as much as they would like to.

Statistically significant positive t-values were found for "Deparmental Status" and "Administration" implying that chairpersons feel they act in this area more than they desire to.

Insert Table 2 about here

Satisfaction is significantly correlated with "Curriculum and Instruction" ($r=.1$) $p<.05$), with "Initiative" ($r=.19$ $p<.05$) and with "Departamental Status ($r=.17$ $p<.05$). The correlation with "Administration" was not statistically significant.

Some additional information, although not included in the study questions, may be worthwith to mention.

Statistically significant correlations were found between the following: "Curriculum and Instruction" and department size ($r=.35$ $p<.02$); "Initiative" and department size ($r=.20$ $p<.05$); "Department Status" and each of the following: 1) Seniority in higher education ($r=.28$ $p<.004$), 2) Number of years in the chairperson position ($r=.36$ $p<.001$), 3) department size ($r=.26$ $p<.01$) and 4) Number of student studying for higher degrees ($r=.27$ $p.01$). Strangely enough, no significant correlation was found between "Administration" and backroung data.

DISCUSSION

The subroles derived from factor analysis cover a relatively wide range of activities in the areas of curriculum and instruction, of initiation, of staff development, of public relations and communication and of administration. These subroles bear internal - curriculum and instruction - as well as external - public relations - characteristics.

Interestingly the enhancement of research, an important university goal, did not emerge as an independent factor. The item pertaining to staff development, which may imply research, emerges under "Departmental Status". It appears, that the fulfillment of this role, in this context, is an outcome of extrinsic needs (if indeed 'status' may be classified as extrinsic), rather that a goal for its own sake.

The comparison of actual and desired fulfillment of subroles generated several differences. Subroles pertaining to "Curriculum and Instruction" that are by nature more inwardly directed are not fulfilled to the same extent as desired. These are roles closely connected with University Goals - dissemination of knowledge - and which each faculty member expects and is expected to fulfill.

Subroles connected with the enhancement of "Departmental Status" and with "Administration" that are by nature more outwardly directed, are fulfilled to a greater extent than desired. Chairpersons' feeling that they are occupied by these tasks more than they desire to, may be a resuet of several reasons: Firstly, these parts of the role may not seem attractive enough, they require lot of energy and time, which would rather be spent in different ways. Secondly, as academicians, unless so required by their discipline, chairpersons were not trained in these areas. For persons who are educated to respect and value knowledge, to function in areas not connected with their expertise, may be annoying. In general, then, it appears that chairpersons are more inwardly rather that outwardly inclined.

A rather similar trend was found for satisfaction: while "Administration" does not yield significant correlations with satisfaction, the other three factors do. However, although statistically significant, these correlations are relatively low (.16 - .19). Does this mean that the chairperson population is a nonsatisfied one? Or that their possible satisfaction stems from factors that are not related to their perceived role? The antecedents of satisfaction need further investigation.

The role of departmental chairpersons may well be the cause for a feeling of isolation, which is quite understood in view of the dilemmas and dual loyalty mentioned before. It is thus proposed, especially in large institutions, to create a forum, a reference group, where chairpersons encounter with each other, discuss their problems, and ways to deal with what they would like to, to facilitate administrative burden so as to derive more satisfaction, which in turn may become a motivating force.

The study presents a preliminary attempt at getting some insight into the inner world of academic departmental chairpersons. It should be regarded as a first small step in this direction, to be followed by a long series of investigations to help get a more complete picture of the state of affair in this area.

References

- Chervch L. and Furth B.E. "On the Threshold of Mass Education" in: Niblett W. Freeman R. (eds.) Universities Facing the Future, San Francisco, Jessey bass 1972.

- Heimler, C.H. "The College Departmental Chairman", The Educational Record, 46, 1967 (158-163).

- Mc Laughlin, G.W., Montgomery J.R. and Malpass L.F. "Selected Characteristics, Roles, Goals and Satisfaction of Department Chairmen in State and Land Grant Institutions", Research in Higher Education, 3, 1975 (243-259).

- Roach J.H.L. "The Academic Department Chairperson: Function and Responsibilities", Educational Record, 57, 1973 (13-23).

- Unesco, "The Contribution of Higher Education in Europe to the Development of changing societies", Symposium organized by the European Center for higher Education, 1976.

Table 1: Varimax Rotated Factor Matrix for the Role of

University Chairpersons (n=90)

Factor	%of Variance	Loading	Mean(SD)
1. Curriculum and Instruction	38.3%		
- Organizes encounters with student in matters of instruction		.73	2.84 (1.25)
- Encourages improvement of instruction		.61	3.45 (1.06)
- Encourages constant curriculum evaluation		.35	2.92 (1.15)
2. Initiative	14.6%		
- Initiates changes in Department Structure		.81	3.33 (1.26)
- Initiates new curricula		.59	3.98 (.91)
- Initiates new projects		.40	3.03 (1.35)
3. Departmental Status	10.6%		
- Encourages staff professional development		.69	3.95 (1.09)
- Fasters public relations		.43	2.15 (1.15)
4. Administration	8.9%		
- Organizes the administrative work of the department		.49	3.98 (.53)
- Plans the department budget		.40	3.25 (.91)

Scores Range from 1 (low rate) 72.4% Total Percent of Variance (higher rate .

Table 2: t-test for Differences between Factors (n=90)

Factor	Mean (SD)	Mean (SD)	Diff.	t-value	df	signif.
1. Curriculum and Instruction	2.89 (.97)	3.43 (1.19)	-.53(1.03)	-4	80	0.000
2. Initiative	3.65 (.83)	3.56 (1.00)	0.08(.68)	0.95	89	n.s.
3. Departmental Status	3.11 (.90)	3.44 (1.24)	-0.33(1.06)	2.96	89	0.004
4. Administration	3.08 (1.30)	3.28 (1.45)	-0.20(1.15)	-1.69	89	0.09

THE CHOICE OF UNIVERSITY ADMINISTRATORS: LEARNED HELPLESSNESS AND DEMOCRATIZATION (A CASE STUDY)

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Brazil

INTRODUCTION - Seligman (1975) has described the state that follows exposure to noncontingency as learned helplessness. These elements characterize helplessness: a) prior exposure to non-contingency, b) the belief or expectancy that responding is not instrumental in influencing outcomes and c) cognitive, behavioral and motivational deficits resulting from that belief or expectancy.

The main point is that when people experience outcomes that are independent of their responses, they come to expect that their efforts will be futile. There is no connection between response and outcomes (Gaber & Seligman, 1980; Dela Coleta, 1982).

The prototypical heplessness effect is a motivational deficit. A reaction of passivity can be observed much alike those of students previous given unsolvable problems. These students show an expectancy of no control and as result a relatively poor performance (Miller & Seligman, 1975).

The attribution of causality for failure, as well as for success, might be external or internal. Weiner et al. (1972) make a distinction between internal and external control. Efffort and ability as internal control have an important distinction: effort is unstable and so subject to the influence of motivation and learning from experience while ability is stable and as a consequence independs of the persons's will. External control has to do with unstable variables like powerful others and luck, and stable ones like task difficulty. Depression, apathy and resignation follow when the casual attribution of failure is lack of ability while shame and guilty are the appropriate feelings when the attribution for failure is lack of effort.

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* Dean School of Education, Professor of Educational Psychology.
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Rodrigues and Marques (1981) showed that effort plays an important role in the dynamics of learning: it is possible to alter the degree of students efforts through motivational plans changing their poor performance into a successful one. There are, however, cultural differences which cause effort to assume various meanings according the ethos of each society. In Brazil the trend is to reward ability as much as effort (Rodrigues, 1980; Rodrigues and Marques, 1981), contrary to other cultures (USA and Germany, for example) where little ability and high effort is rewarded more for success then high ability and high effort, and high ability and low effort is punished more for failure than low ability and low effort. Perhaps, apathy, depression and resignation, being so very common in Brazilian universities, could be explained by the finding that ability and effort are equally rewarded by teachers.

University administrators are teachers who at some point of their career were asked to assume administrative duties. They arrive at administrative positions after 10 to 20 years of socialization inside the academic environment. They have, in general, a self-image of a successful person and most of the time as a high achiever. However, the criteria by which success is judged become less precise in measurement, less stable over time, and less widely shared, as the administrator achieves more experience in his terms of office. He discovers that a wide assortment of factors outside his control are capable of overwhelming the impact of any actions he may take (Cohen & March, 1974, p. 201). He learns to be helpless: contingency does not follows his response, effort is futile considering the entanglement of the circunstances that intertwine his daily life. This occurs from the beginning before the process for the choice of administrators is started.

Marques (1983) argues that if the administrator is denied the opportunity to achieve his purposes he may end up repeating the "archetype" of the tyrant where the appearance of the most perfect order hides the essence of disorder and human misery. She defended the thesis that solidary administration-dialogue, debate and open examination of problems - can be developed to better construct the patterns of a democratic environment.

The questions that the present study tries to answer are:

a) what is the effect of the administrator choice process on the academic career of the university teacher?

b) how do potential administrators react to failure situations for which they clearly have no control?

c) does the attribution of external-internal control make any difference?

The answers to such questions might enlighten the necessary teachers and administrators undestanding of a cyclic event of the university life: the choice of its administrators.

METHODOLOGY

The actors were asked why they failed to be elected or nominated for the administrative position through extensive and non-structured interviews held in a conversational fashion.

These interviews were conducted after one to three weeks from the learning of failure results and rechecked recently by telephone,since the events took place in different points in time for the distinct actors.

Participant observation with the registration of daily events was developed during the election period and in the waiting time of the decision concerning the choice of the administrator by the Federal Government.

The episode technique was used before (Marques, 1983), as a mode of taking from the experiences inside the University those fragments which make for trouble, conflict and dissonance.

The episodes are then analysed and afterwords written under topics that emphasize their meanings, being they different for each study. In the present one the items selected are: a) the episode, its description, b) reactions from the Actor and c) discussion, relating what was observed with what the specialized literature has to say about the particular issues under investigation.

CONTEXTUAL DATA

In the beginning of the decade of the 80s, the liberalization of the political regime and of the Government made it possible for the University to discuss the traditional ways of choosing its administrators. The election of the State Governors (1982), who were previously chosen by the Federal Government, and even more so the election campaign throughout the states, has stimulated critical thought and the awareness of the political restraints to the exercise of freedom inside the University.

The issue of university autonomy started to be paramount in the discussions on the university decision processes. University administrators have been fighting, for a long time, to secure their right to have autonomy in matters of financial and academic decisions.

According to laws that were passed during the periods that followed the 1964 revolution, the Federal Council of Education has the right to establish the minimun curriculum for all academic programs on the undergraduate level, making it the same for higher education institutions in Brazil.

The political liberalization and most of all freedom of speech pointed to the need for being free from the pressures from the Federal Government, in such a way the faculty, students and, the university employees could make the choice of its administrators. This has been understood as a substantial aspect of the university democratization. The president, the vice-president, the deans and vice-deans of schools and institutes would then be chosen through direct election from a list of six names elected by the election committee of each university, instead of being appointed by the Federal Government.

Traditionally the University Council formed by deans of schools and institutes, with representatives elected by students and professors,made a list of names (three and afterwords six) to be presented to the Federal Government. After the university reform (1968),the committee for election of the six names is formed by the University Council (deans and professors, students and community representatives),the Council for Teaching and Research (Coordinators of the Committes for Curricular Planning and Development, students and community representatives and the Council for Fiscal Matters (community and University council representatives). The total of members who exercise the right to vote for the list of six names for president and vice-president is 76. In the case of Deans and Vice-deans the six names list is elected by each school or institute by its superior council, whose number varies.

Size and age has been considered an important variable to define status of a university (Cohen and March, 1974, p. 93);to such an extent this particular university has 25.000 undergraduate students plus 3.000 graduate students and it's going to comemorate next year its 50th anniversary. Is has around 3.000 professors distributed in 83 departments.

To keep with the tradition, but at same time to follow the aspiration for autonomy it is common nowadays, to have a prior election where all teachers, students and employees vote for the administrative positions. This direct and universal election is conducted in order to exercise political pressure on the Election Committee of the Superior Councils to choose the names elected by the university community and at same time, later on, to negociate with the Federal Government for the nomination of the names who received the majority of the votes. The final nomination of the top university administrators is done by the President of Brazil in the case of the University President and Vice-President and by the Minister of Education for Deans and Vice-Deans.

Inside the university the groups are formed during the one year previous to the University President nomination. The choice of the Deans follows the same patterns and it is done after the University President nomination. The idea is to have all the administration incumbents renewed at the same time. In each group there is a candidate who commands the campaign by personal conference with each of the members os the Superior Councils, the voters. Small group discussions are also held to clarify some important issues. Sometimes public debates are offered where some confrontation might occur. In the process of group formation casual contacts in the corridors of the University between activities and telephone conversations are also some of the tactics to convince the electors to vote for this or that candidate.

Recently the Faculty Association which took the flag of liberalization promoted group discussions (seminars, panels) about proposals and theoretical ideas. The candidates, however, are seldom willing to expose themselves publicly in such discussions. Their activities are rather inconspicuous; their decisions about the names to be candidates for the list are announced to the small group which support them. The people inside the group take on the work to disseminate such names among the voters and in the university community as well.

The news is spread very quickly through oral communication without the use of the press (radio, television or newspaper). It's said that this is an internal problem, therefore it should be developed through the interaction of people and groups inside its walls. Later, when the names have been chosen by the election committee, then a formal comunication to the press is made. And then the battle for the name to be nominated by the Federal Government starts.

EPISODES, INSTANCES OF THE UNIVERSITY EXPERIENCE

a) Episode 1 - Professor A was a succesfull Superintendent for Academic Affairs and during his four years period in office, different departments have accomplished many important curriculum reforms with much participation of professors and students. So when the time for University President election came, he was a natural candidate for the list to be sent to the Federal Government. The group of professors who supported his name worked very hard and the group,as well as he, felt very confident that his same was going to be chosen by a large majority of votes in the Election Committee. The results did not confirm such an expectation. He finished his term as Superintendent and went back to his Department to teach and to conduct research. It is an observation from some of his friends that he never more stepped into that building where the higher administration of the University has its headquarters. He clearly keeps avoiding any kind of administrative position even at the School or Institute level.

b) Reactions from the Actor A - When asked to explain why he failed to have his name on the list of six names for University Presidency, he argued that time was too short to convince the voters of his candidacy. He also mentioned that the election compaign was not well structured and that, perhaps, he was too strict on ethical principles to adapt to different and contradictory ideologies inside his own support group.

c) Discussion - The reactions from Actor A are clearly on the side of internality. He feels guilty concerning his own actions and the excuses which he presented to himself are but rationalizations to help himself accept the reality as it is perceived. His self-image is preserved in such a way as to give himself the belief that he is better than others, since he has "ethical principles". He also maintains his potential for control, which is very helpful to him at this moment. As Levenson (1974 p. 377-378) points out, "people who believe the world is unordered would behave and think differently from people who believe the world is ordered but that powerful others are in control. In the latter case a potential for control exists". Actor A therefore didn't risk himself to get in a real helpless situation, he avoided it, being internal and trying some defensive mechanisms to explain what has happened to him.

b) Episode 2 - Professor's B main characteristic is the one of the higher achiever. He is very well known by the community, professionally, and his reputation goes beyond the country frontiers. His public image includes the fame of a researcher and a community leader as well, with an intensive participation on issues of social interest. He had had an outstanding involvement in the administration of the University in the Graduate Program of his specialization and in the Council for Research and Teaching. His election compaign was developed through small group-discussions: students, women voters, community representatives and professors,according to different areas of knowledge. His presence and his ability to persuade made extra points in popularity. Therefore his confidence and the optimism of his followers were great by the time of the election. He lost by one vote and of course felt very disappointed. He went back to his Department to teach and to conduct research, dedicating himself to his previous loved activities: publishing in international journals and traveling now and then to attend national or international conferences.

b) Reactions from Actor B - When asked about the reasons that could explain his failure to secure a majority of votes,which could enable him to have his name on the list of six names to the University Presidency he reacted saying: "this is a crazy process, rules are not clear at all, no matter what one does, the results are unpredictable, academic performance is the least to be taken into consideration, people are more inclined to vote for someone who promises to ofter what beforehand he knows to be impossible. The fight between election capaign groups is disgusting and much of the time doesn't follow the minimum prerequisites of academic behavior".

c) Discussion - The attributions of Actor B are clearly on the side of externality. The responsibility of his failure is attributed to others and to the "crazy process"(unordered) which makes for the social interaction as it occurred. He doesn't mention lack of effort or ability, on the contrary he maintains a high self-image. His excuse for his failure is that effort is not worthwhile, and it is one tactic for preserving his self-esteem (Garber & Seligman, 1980). In this case any effort would be futile. He does not feel guilty or responsible for the results, and at least apparently gives up any desire or ambition concerning what before seemed to be a very important goal in his academic life. It is, however, no matter what is said, a defensive way established in order to cope with the failure situation.

a) Episode 3 - Professor C was holding a high position in the Ministery of Education at the elections time, living in Brasilia. He was invited for this position after being an outstanding teacher and researcher for fifteen years. He came very often during the election campaign for contacts with the voters, support groups and current officers of the university administration. His election was quite easy and his votation without question showed that the majority was on his side. The list was sent to the Federal Government and then started his anguishing problems to secure political support for his nomination. After more than four months of battling, he agreed to stay in his present position with a slight promotion and to have another name from the list to be nominated for the coveted position of University President. Soon after wards he asked for retirement and gave up any connections with teaching, research and university administration.

b) Reactions from Actor C - When asked about his feelings regarding this episode he showed bitterness, revealing difficulty to talk about or even to think over this bad experience. He attributed the responsibility for his failure to be nominated to the entanglements of political power which makes this or that person the most convenient, according to unpredictable circunstances. Although he makes a clear external attribution, he feels helpless to control the variables in spite of knowing them quite well.

c) Discussion - The attributions of Actor C, like the ones of Actor B are external: the political power. But the modes to cope with it are different. One gives up the administrative university career disenchanted with the "crazy process", the other, perhaps relying on similar feelings, gives up his university teaching career. The last one does not want to be in touch with an environment in which he recognizes that responding is not instrumental in influencing outcomes (Seligman, 1975). Actor C discovered that there are factors outside his control that have, however, the capacity to overwhelm the impact of any action he may take (Cohen and March, 1974, p. 201). His adaptive mechanism to cope with such perception is to escape the situation, looking for a working environment where he can maintain his internal locus of control.

CONCLUSIONS

a) The failure to be chosen through the present university process for the choice of administrators has a detrimental effect upon the university teaching career.

b) Feelings of helplessness can occur when the attribution for failure is external or internal, but externality mainly the attribution to powerful others, diminishes expectations for control and therefore the motivation for further involvement.

c) The trend toward university democratization might bring new ways to choose university administrators and perhaps less suffering for the teachers who, after a long teaching and research experience, are willing to engage in the administration of their university.

REFERENCES

COHEN, M.D. & MARCH, J.G. Leadership and ambiguity; the American College President. New York, McGraw Hill, 1974.

DELA COLETA, J.A. Atribuição de causalidade; teoria e pesquisa. Rio de Janeiro, Editora da Fundaçao Getulio Vargas, 1982.

GARBER, J. & SELIGMAN, M.E.P. (ed.) Human helplessness: theory and applications. New York, Academic Press, 1980.

LEVENSON, H. Activism and powerful others: distinctions within the concept of internal-external control. Journal of Personality Assessement, 1974, 38, 377-383.

MARQUES, J.C. Solidary - or solitary - administration in a non solidary world. EARDHE Congress, Fourth International Congress, Frankfurt, Germany, July, 1983.

MILLER, W.R. & SELIGMAN, M.E.P. Depression and learned helplessness in man. Journal of abnormal Psychology, 1975, 84, 228-238.

RODRIGUES, A. Causal ascription and evaluation of achievement related outcomes: a cross-cultural comparison. International Journal of Intercultural Relations, 1980, 3-4, 379-389.

RODRIGUES, A. & MARQUES, J.C. Atribuição de causalidade e avaliação do rendimento - como o professor valoriza aptidão e esforço. Educação e Realidade, 1981, 6(2), 7-28.

SELIGMAN, M.E.O. Helplessness: on depression, development and death. San Francisco, Freeman, 1975.

WEINER, B. et al. Perceiving the causes of success and failure. In JONES, E.E. et al. (ed.) Attribution: perceiving the causes of behavior. Morristown, General Learning Press, 1972.

THE EFFECT OF ADMINISTRATIVE STRUCTURE ON FACULTY PRODUCTIVITY

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Mid-America Nazarene College

The objectives for institutions of higher education vary widely, as do the techniques for accomplishing these goals. Although there is great variety in the missions, constituencies, and activities, every individual institution is greatly dependent upon its faculty to transfer knowledge, motivate students, and/or perform research. Because faculty members play such a significant role in determining whether or not an institution successfully achieves its goals, it is imperative that higher education develop a complete understanding of a faculty member's professional role, and structure the college toward maximizing a faculty member's productivity.

Faculty accountability in higher education and more specifically, faculty workload, has been an area of interest within the higher education community for a number of years. Recently this interest has spread outside the academic community to the constituencies of these institutions. A number of complex forces have contributed to this increased public interest in faculty workloads, including low public confidence in colleges, cutbacks and retrenchment on campus, state appropriations, and the advent of collecting negotiations within academia.

Although the majority of discussions concerning increased faculty activity analysis has been directed at public institutions, the problem proves to be just as acute in the private sector. These private institutions do not need to answer to state legislatures in the same way as the public colleges, but they are accountable to powerful constituencies which are asking similar questions.

The recurring theme calling for increased faculty productivity stems most forcefully from the decreasing financial resources of these institutions.

Consequently, college administrators have focused attention on the problem of faculty workload realizing that faculty salaries presently represent 45% to 55% of an institution's operational budget. But, the unexpected result of this attention on faculty load has been the opportunity to increase the productivity of faculty members both inside and outside the classroom.

Mid-America Nazarene College is a private, church related, liberal arts college situated on the eastern edge of the small community of Olathe, Kansas, 19 miles from downtown Kansas City. The College was founded in 1968 and has grown to become the largest private college in the state of Kansas. This College has been governed by the traditional administrative structure of most private church-related liberal arts colleges. The rapid growth of this institution has dictated an administrative structure which, like most small colleges, has evolved rather than followed a blueprint of development.

In order to more effectively govern the College, the administrative structure of the institution was changed from a committee model to a cabinet model of operation in May of 1983. The result of this change, not only had a positive impact on the administrative flow of the institution, but more importantly, on the productivity of the College's faculty members.

These two approaches to government contrast sharply. The committee model has characterized Mid-America's structure since its opening days. The College had nine standing committees including: (1) the academic council; (2) the administrative council; (3) the admissions policy and academic retention committee; (4) the athletic council; (5) the library committee; (6) the scholarship and financial aid committee; (7) the finance committee, (8) the enrollment development committee; and (9) the long-range planning committee. As well as these committees many others functioned as advisory groups to campus life, and to college publications.

But the lack of accountability among these committees was an inherent weakness in the governance of the institution. Often these committees were chaired by figure heads or made up of members whose expertise and lack of information lead them into areas over which they had little direct influence. This weakness easily lead into situations characterized by frustration on the part of membership and it increased the adversarial relationship between faculty and administration. At times these committee meetings degenerated into interrogation sessions for the administrator and, worse, committee reports often found their way to the administrator's bookshelf only to collect dust. In contrast, the cabinet model adapted by the College builds a system of accountability and responsibility into each of the committees of the institution.

The new model calls for five planning committees of the controlling board, each supervised by the respective executive administrator. Each of these administrators also becomes the chairman of a corresponding planning committee of the faculty for at least two reasons: (1) he has the information needed to make good recommendations, and (2) it is the administrator who must implement the plans. Thus the faculty, administration, and trustees maintain a triangle of planning and review activities. The function of these five planning committees is to review and update the College master plan. Although traditionally the long range planning concentrated only on facilities and building construction, the new master planning approach calls for continual recycling of campus-wide concerns as reflected in a dynamic and consistently evolving plan of desired outcomes and necessary actions.

Membership in each of these planning committees consists of (1) the executive administrator as chairman; (2) one faculty member elected by each of the seven academic divisions of the College; (3) one board member; (4) one community member; and (5) one student member. These planning groups report to the faculty assembly. All recommendations regarding the master plan are considered by the assembly. In turn, this group passes recommendations for approval to the President. The final approval of actions relating to the master plan are then presented to the Board of Trustees by the President (see attachment B).

The advantages of the cabinet model are considerable and impressive. It encourages a spirit of cooperation between faculty, administration, and controlling board. It creates a system in which committee proliferations and frustrations are eliminated by improving the communication between faculty, representatives, and administrative chairmen. It focuses responsibility for decision making at the lowest level, placing this responsibility in the authority of people who can be held accountable -- not in committees alone. It gives faculty the opportunity for meaningful input to their major areas of concern: decision making which has an impact on their day-to-day functions and that which affects the future of the institution from their individual perspectives.

But, most importantly, this administrative change has lead to a dramatic change in faculty workload. The elimination of the variety of seemingly endless special, standing and ad hoc committees has allowed the faculty more time for teaching, study, research, counseling and advising of students.

This change in faculty workload is demonstrated by a comparison of the activities of the faculty of Mid-America Nazarene College during the fall semester of 1983, with a 1979 dissertation (University of Maryland) studying the faculty workload of five similar colleges controlled by the Church of the

Nazarene including Mid-America Nazarene College. The same format for the collection of data was used in each of these studies and both studies questioned 50% of the fulltime faculty. The significant difference between faculty workload in the current study and the 1979 study are summarized below. The faculty responding to the survey indicated a belief that the shift in workload is due to the change in administrative structure, and is not the result of any other change at the College.

Decreased Activity

1. College-wide Committees - Decreased 64%
   (from 2.9 hours per week in 1979 to .9 hours per week in 1983)
2. Student Service Administration - Decreased 50%
   (from .2 hours per week in 1979 to .1 hours per week in 1983)
3. Student Service Committees - Decreased 67%
   (from .3 hours per week in 1979 to .1 hours per week in 1983)
4. Executive and Financial Administration - Decreased 75%
   (from .8 hours per week in 1979 to .2 hours per week in 1983)
5. Public Relations and Development - Decreased 33%
   (from .3 hours per week in 1979 to .2 hours per week in 1983)

Increased Activity

1. Academic Advising - Increased 32%
   (from 3.1 hours per week in 1979 to 4.1 hours per week in 1983)
2. Course and Curriculum Development - Increased 28%
   (from 1.8 hours per week in 1979 to 2.3 hours per week in 1983)
3. General Scholarship - Increased 38%
   (from 4.2 hours per week in 1979 to 5.8 hours per week in 1983)
4. Research and Writing - Increased 17%
   (from 3.5 hours per week in 1979 to 4.1 hours per week in 1983)

5. Counseling of Students - Increased 58.3%
   (from 1.2 hours per week in 1979 to 1.9 hours per week in 1983)
6. Recruitment of Students - Increased 100%
   (from .4 hours per week in 1979 to .8 hours per week in 1983)

The reliability of the research method is evidenced by the insignificant change in the total number of hours worked each week as reported by faculty members in both studies: 52.6 hours per week in 1979; 52.7 hours per week in 1983.

TOTAL HOURS PER WEEK	1979 Hours	1983 Hours	Hours Change	Percentage Change
Scheduled Teaching	22.7	22.9	+ .2	+ 1%
Instructional Support	10.4	13.4	+3.0	+29%
Research and Writing	3.5	4.1	+ .6	+17%
Committee Work	3.4	1.7	+1.7	+50%
Service	6.2	4.5	-1.7	+14%
Administrative Work	1.6	.6	-1.0	-63%
TOTAL HOURS	52.6	52.7	.1	.1%

Despite the response of the faculty it is the opinion of the researcher that although the shifts in workload effecting faculty members' involvment in committees and administrative activities is due to the administrative shift, two other changes are due to other factors.

The 14% drop (1.7 hours per week) in service is likely due to the freezing of faculty salaries which have encouraged faculty to spend more discretionary time in income-producing activities. Secondly, the 100% increase (.8 hours per week) in recruitment of students is due to the College Trustees decision to correlate faculty salaries to enrollment. (See attachment A for complete findings.)

The three most significant findings to be drawn from the study include:

1. The shift in administrative structure enabled the faculty to spend less time in committee work and administrative tasks (50% less total committee time; 63% less total administrative time). It was the opinion of eighty-three percent (83%) of the faculty involved in the second study that reducing the committee and administrative work was beneficial to them personally and to the institution.

Sixty-three percent (63%) of the faculty agreed the new structure had not gained the faculty increased access to administrators or a greater role in policy decisions, but neither had it decreased the faculty members' influence. This reaction may be due to the fact that at the time of the research the new structure had been in practice only one semester. Many of the planning committees involving faculty had not met for the first time, as the bulk of the policy work was scheduled for the second semester of the year. It is the opinion of the researcher that after the system has been experienced for a full year, satisfaction among the faculty regarding their involvement in policy decisions, will increase.

2. Less committee and administrative work resulted in a shift in faculty workload enabling faculty to spend more time with students. Faculty involvement with students increased dramatically in three areas of direct contact: A) academic advising, 32%; B) counseling of students, 58%; and C) recruitment of new students, 100%.

Although it is difficult to place a value judgment on this shift, ninety-eight percent (98%) of the faculty surveyed, and one hundred percent (100%) of the administrators agree this is a positive change. The mission of Mid-America Nazarene College centers on teaching, and the development of the student. Thus, it is possible to project that this change has strengthened the productivity of the faculty in regard to the central mission of the College.

3. The shift in faculty workload demonstrated an increased amount of time spent by faculty in general scholarship (38%), course and curriculum development (28%), and research and writing (17%). Again, these shifts were viewed as positive changes by ninety-four percent (94%) of the faculty and one hundred percent (100%) of the administrators.

The mission of the institution is not research and publication by faculty, but increased personal study and scholarship will strengthen the teaching ability of a faculty member. It is widely agreed, time for study by a faculty member is more productive in fulfilling the mission of the College, than is a faculty member's involvement in a committee which has little ultimate responsibility and even less authority.

One of the most difficult challenges facing higher education is to accurately evaluate the effectiveness of an institution or faculty member. Years or even generations must pass before the true impact of education is determined. How faculty members use their time cannot alone generate effective teaching and learning, but without the time to dedicate to the central mission of the College, faculty members have little opportunity to succeed.

REFERENCES

Manning, Charles W. and Leonard C. Romney. Faculty Activity Analysis: Procedures Manual. Boulder, Colorado: National Center for Higher Education Management Systems at Western Interstate Commission for Higher Education, 1973.

Parrott, Roger. "A Comparison of Faculty Member's Reported Professional A-tivities and the Workload Desires of College Presidents for Faculty Members in Five Liberal Arts Colleges of the Church of the Nazarene." Unpublished Dissertation. College Park, Maryland: University of Maryland, 1979.

ATTACHMENT A

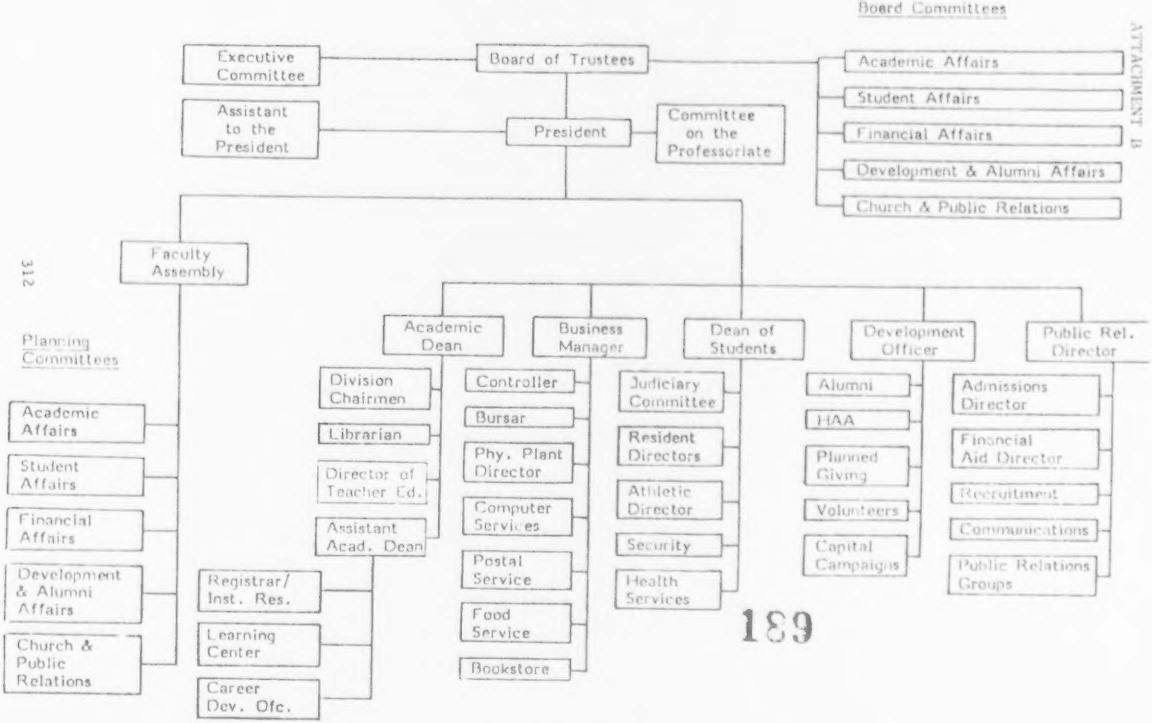
THE EFFECT OF ADMINISTRATIVE STRUCTURE ON FACULTY PRODUCTIVITY

MID-AMERICA NAZARENE COLLEGE, 1983 STUDY COMPARED WITH THE 1979 DISSERTATION STUDY OF FIVE NAZARENE COLLEGES	MANC HUERHGE	1979 STUDY	HOURS CHANGE	PERCENT CHANGE
CLASSROOM HOURS	13.3	13.2	.1	.758%
CLASSROOM PREPARATION	9.6	9.5	.1	1.05%
TOTAL SCHEDULED TEACHING	22.9	22.7	.2	.881%
ADVISING	4.1	3.1	1	32.3%
UNSCHEDULED TEACHING	1.2	1.2	-.1	-7.7%
COURSE AND CURRICULUM DEVELOPMENT	2.3	1.8	.5	27.8%
GENERAL SCHOLARSHIP	5.8	4.2	1.6	38.1%
TOTAL INSTRUCTIONAL SUPPORT	13.4	10.4	3	28.8%
TOTAL RESEARCH AND WRITING	4.1	3.5	.6	17.1%
DEPARTMENTAL COMMITTEES	.8	.9	-.1	-11%
COLLEGE WIDE COMMITTEES	.9	2.5	-1.6	-64%
TOTAL COMMITTEE WORK	1.7	3.4	-1.7	-50%
SERVICE TO AN EDUCATIONAL INSTITUTION	.2	.2	0	0%
SERVICE TO A SOCIAL AGENCY	.1	.2	-.1	-50%
SERVICE TO A COMMUNITY GROUP	.5	.7	-.2	-29%
SERVICE TO A PROFESSIONAL ASSOCIATION	.3	.5	-.2	-40%
SERVICE TO THE GENERAL CHURCH	.7	.8	-.1	-13%
SERVICE TO A ZONE CHURCH	[illegible]	[illegible]	[illegible]	-47%
SERVICE TO THE COLLEGE CHURCH OR CHAPEL	1.3	1.5	-.3	-19%
OTHER SERVICE	.4	.2	.1	33.3%
TOTAL SERVICE	4.5	6.2	-1.7	-27%
STUDENT SERVICE ADMINISTRATION	.1	.2	-.1	-50%
STUDENT SERVICE COMMITTEES	.1	.3	-.2	-67%
SPONSORSHIP OF STUDENT ORGANIZATIONS	1	1.1	-.1	-9.1%
COUNSELING OF STUDENTS	1.9	1.2	.7	58.3%
FINANCIAL AID COUNSELING	0	0	0	0%
COACHING OF COLLEGE ATHLETICS	.2	.2	0	0%
RECRUITMENT OF STUDENTS	[illegible]	.4	.4	100%
STUDENT RECORD KEEPING	1.2	1.1	.1	9.09%
OTHER STUDENT SERVICE RELATED WORK	.2	.32	-.12	-38%
TOTAL STUDENT SERVICE	5.5	4.82	.68	14.1%
EXECUTIVE ADMINISTRATION	.2	.8	-.6	-75%
FINANCIAL MANAGEMENT	.1	.4	-.3	-75%
COMPUTER RELATED ADMINISTRATION	.1	.1	0	0%
PUBLIC RELATIONS AND DEVELOPMENT	.2	.3	-.1	-33%
TOTAL ADMINISTRATIVE WORK	.6	1.6	-1	-63%
TOTAL HOURS 311	52.7	52.6	.08	.152%

ATTACHMENT B

MID-AMERICA NAZARENE COLLEGE

Organizational Chart
Cabinet Model


Board Committees
Executive Committee
Board of Trustees
Academic Affairs
Student Affairs
Financial Affairs
Development & Alumni Affairs
Church & Public Relations
Assistant to the President
President
Committee on the Professoriate
Faculty Assembly
Planning Committees
Academic Affairs
Student Affairs
Financial Affairs
Development & Alumni Affairs
Church & Public Relations
Academic Dean
Division Chairmen
Librarian
Director of Teacher Ed.
Assistant Acad. Dean
Registrar/ Inst. Res.
Learning Center
Career Dev. Ofc.
Business Manager
Controller
Bursar
Phy. Plant Director
Computer Services
Postal Service
Food Service
Bookstore
Dean of Students
Judiciary Committee
Resident Directors
Athletic Director
Security
Health Services
Development Officer
Alumni
HAA
Planned Giving
Volunteers
Capital Campaigns
Public Rel. Director
Admissions Director
Financial Aid Director
Recruitment
Communications
Public Relations Groups

TESTING AND TEACHING FIRST-YEAR STUDENTS IN MATH AND SCIENCE

WEDNESDAY, 4 JULY

1600 - 1730

TEACHING, LEARNING AND MATHEMATICS: INSIGHTS FROM EXPERIENCE

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INTRODUCTION

This paper summarises briefly the report of a research project conducted at Victoria University of Wellington (VUW), New Zealand, from 1979-1983. The experiences to be shared are those of students taking pure mathematics courses at VUW (Fig 1), of selections from published literature, and of the authors who have been involved in various studies of the teaching, evaluation and development of pure mathematics courses since 1977 - Clark, Imrie, *et al.* (1977), Blithe and Johnston (1977), and Imrie, Blithe and Johnston (1980).

From a survey of attainment, attitudes and study habits of university students enrolled in pure mathematics courses in 1979, an initial sample of 40 students produced 18 detailed case studies of students over a period of four years. These cases are the focus of the project report to enable the readers to compare and contrast the experiences of these students with their own experiences and knowledge of students.

Fig.1 DETAILS OF MATHEMATICS COURSES AT VICTORIA UNIVERSITY

ENTRANCE TO THE UNIVERSITY

Entrance can follow a pass in the University Entrance (UE) Examination (at end of 6th Form year) or a 7th Form year, at the end of which the Bursaries Examination may be taken. In first year there is a wide range of ability because New Zealand has a low threshold entry policy for its universities.

FIRST YEAR PURE MATHEMATICS COURSES (1979)

MATH 113 (Calculus); MATH 114 (Algebra and Geometry); these courses were each six-credit, full year courses, traditionally taught.

MATH 115 (Differential Calculus, Vectors, Matrices); this was a six-credit first-half-year course taught by a modified 'Keller Plan'.

MATH 116 (Integral Calculus, Co-ordinate Geometry, Algebra); this was a six-credit, second-half-year course, traditionally taught; for 1980 it was redesigned as a Keller (1968) course.

MATH 115 and MATH 116 are options available to those with a good Bursary Mathematics mark (65% or more); they cover the same material as MATH 113 and 114, but avoid some repetition of school work.

Note: (a) 'traditional' in the above means: regular timetabled lectures, accompanied by an optional weekly tutorial with regular assignments; assessment for grading principally by a final examination.

(b) A total of 102 credits is required for a B.Sc. degree.

PAST EXPERIENCE

In New Zealand Parkyn (1959, 1967) reported on success and failure of first year students at university and his work was complemented by an intensive study by Small (1966) on achievement and adjustment in the first year. For first year students following full-time courses, Parkyn considers that r = 0.54 could be taken to represent the correlation between the best prior measures of ability and subsequent performance (average pass rate approx. 67%). Parkyn's general conclusion is that:

> 'a large proportion of the actual failure was unnecessary, in the sense that it was not inherent in or predetermined by the ability and attainments of the students on entry to the university' (p. 14).

For comparison, Table 1 shows correlations and average pass rates for first year mathematics courses in 1979.

TABLE 1. CORRELATIONS OF MARKS OF N.Z. BURSARIES EXAMINATION (1978) AND 100-LEVEL MATHEMATICS EXAMINATIONS (1979) AT VUW; ALSO AVERAGE PASS RATES

	r	N	Pass(%)
BURSARY/MATH 113 (fy)	0.44	177	69.3
BURSARY/MATH 114 (fy)	0.57	192	67.8
BURSARY/MATH 115 (1/2)	0.53	82	95.9
BURSARY/MATH 116 (2/2)	0.52	78	91.7

NOTE: (1) Pass rate based on number eligible to sit the final examination.
(2) (fy): full year; (1/2): first semester; (2/2): second semester.

MODELS OF EXPERIENCE

Smith (1960) uses the model shown in Fig. 2 to classify into three categories 'all the variables involved in and related to the actions which make up teaching' (p. 234).

McKeachie (1974) comments on the use of models:

> 'Models of the instructional process may limit one's awareness and ability to change but, properly conceived, they can be tools to increase one's capacity for perceiving and understanding the complexity of this very special changing human interaction' (p.187).

Bloom's theory or model of school learning (Fig. 3) was published in the book, 'Human Characteristics and School Learning' (Bloom, 1976) which has been severely criticised by Freudenthal (1979). After studying the dissertations of Bloom's graduate students, which form the principal sources of the book, Freudenthal concludes that the use of these sources is distressing because of misrepresentation, omission and obliteration,

Fig. 2 A PEDAGOGICAL MODEL (Smith, 1960)

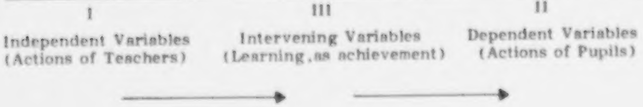

I
Independent Variables
(Actions of Teachers)
III
Intervening Variables
(Learning,as achievement)
II
Dependent Variables
(Actions of Pupils)

Fig.3 MAJOR VARIABLES IN THE THEORY OF SCHOOL LEARNING (Bloom, 1976)

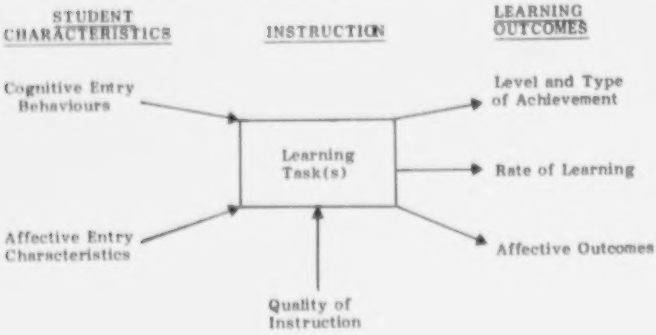
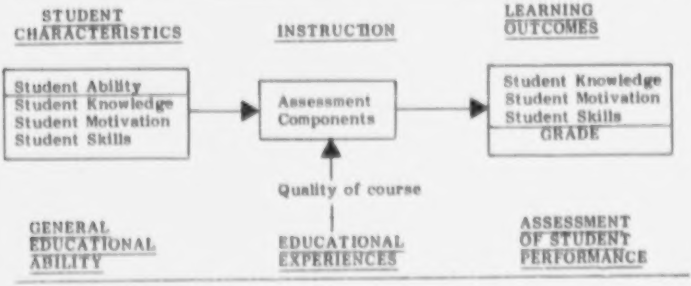

STUDENT CHARACTERISTICS
INSTRUCTION
LEARNING OUTCOMES
Cognitive Entry Behaviours
Affective Entry Characteristics
Learning Task(s)
Quality of Instruction
Level and Type of Achievement
Rate of Learning
Affective Outcomes

Fig.4 AN ALTERNATIVE MODEL FOR STUDENT EDUCATIONAL EXPERIENCE (Imrie, 1983)


STUDENT CHARACTERISTICS
INSTRUCTION
LEARNING OUTCOMES
Student Ability
Student Knowledge
Student Motivation
Student Skills
Assessment Components
Quality of course
Student Knowledge
Student Motivation
Student Skills
GRADE
GENERAL EDUCATIONAL ABILITY
EDUCATIONAL EXPERIENCES
ASSESSMENT OF STUDENT PERFORMANCE

incompatibility, inconsistencies and indications of information fabrication.

While the book might have serious deficiencies, the variables identified by Bloom are used to develop the model (Fig. 4) relevant to this study. In developing this assessment-centred model (Imrie,1983) the overall structure of Bloom's model is retained but makes more specific the variables which relate to student performance by distinguishing between student quality (course specific - knowledge, motivation, skills) and student ability (general: not course specific).

GENERALISATION AND EXPERIENCE

During the last 30 years much educational research effort has tried to isolate cause and effect relationships relevant and generalisable to teaching/learning interactions. Cronbach (1957) was particularly influential in encouraging method/outcome studies based on research into Aptitude and Treatment Interaction (ATI). In 1975, Cronbach recognised the limitation of this approach with this statement:

> 'An ATI result can be taken as a general conclusion only if it is not in turn moderated by further variables'. (p. 119)

While McKeachie and Kulik (1975) feel that ATI research 'is slowly developing better explanations of individual difference and task variables', they too acknowledge the significance of commonsense by concluding:

> 'Unfortunately, simple generalisations are suspect. Progress has been slow not just because of our lack of theorists and researches, but because education really *is* complicated.' (p. 199)

Docking (1976) identified four major problems which in effect invalidate all previous research into the impact of student/teacher interaction. To overcome these problems in this study, student experience is investigated, reported and validated by case study set in context. The case study is idiosyncratic while the context may be generalised.

One generalisation might be that there is no such thing as a typical student. The case studies in the report are not presented as those of typical students; that would be self-contradictory. While each case study involves selection of material, the experiences of each student are represented as valid (for the student) rather than typical so that the reader can appreciate the 'circumstances of individual cases' (Small, 1966). Accordingly, the report provides the reader with access to all the observations of the study, in the form of 18 case studies of individual students set in the contexts of programmes of study, peer group, institution, together with published experiences of educational research and development. It is the interaction of the reader's own insights and experiences with the report, that will provide external validity.

METHODOLOGY

The project methodology had two principal components:

(1) the collection and interpretation of information

(2) the selection and reporting of information

Information was collected

(a) by aggregating statistics for the majority of students taking pure mathematics courses (in 1979), from questionnaire responses with reference to attainment, attitudes and study habits;

(b) by selecting students for interview (as case studies) with reference to previous attainment (Bursary mark - see Fig.1), purpose in taking the course, and pass level intention.

Details of the sources of information and response rates are given in Fig. 5. Generalisation has implications not only for the aims and planning of research in education but also for the reporting of research. The intention of the case studies (one of which is part of the presentation) is to give the reader responsibility for interpreting rather than accepting the information.

In addition to the sources of information indicated in Fig. 5, the official course records of student attainment were incorporated in each case study. Attainment was also reported as an index of student performance to compare performances in pure mathematics and in other courses, and as a performance ratio to give a measure of attainment with reference to maximum possible attainment (in terms of a course load factor, a pass factor and a grade factor). During 1982 each student was sent two copies of the student's case study with a request to validate the case study by amendment, comment and approval.

To facilitate interpretation by the reader in terms of the reader's own subjective experience, context information is also important. In this study there were three important contexts to consider for an appraisal of the performance of an individual student taking a mathematics course in the first year at university:

(1) the performance of other students (the sample group and the total peer group)

(2) the other courses that are part of the student's degree programme of studies;

(3) the management responsibilities, for the student, of non-academic matters (e.g. domestic, economic, social).

Fig.5 **DATES AND RESPONSE RATES FOR STUDENT SOURCES OF INFORMATION**

(PQ) PRE-COURSE QUESTIONNAIRE (26 February - 2 March : Week 1)

Course enrolment (28 February)		*Questionnaire Response*	
MATH 113	341		
MATH 114	311	N = 322	(94.4%)
MATH 115	108	N = 104	(96.3%)

(I1) FIRST INTERVIEW (26 March - 11 April : Weeks 5-7)

Course enrolment (29 March)			
MATH 113	340	261 male	79 female
MATH 115	99	81 male	18 female

Interview sample			
MATH 113	29	21 male	8 female
MATH 115	11	10 male	1 female

(D) DIARY (28 May - 3 June : Week 14)

Diary sample			
MATH 113	27	20 male	7 female
MATH 115	9	8 male	1 female

(Q1) MID-COURSE QUESTIONNAIRE (2-6 July : Week 19)

Course enrolment (30 June)		*Questionnaire Response*	
MATH 113	313	N = 224	(71.6%)
MATH 114	299	N = 203	(67.9%)
MATH 115	94	N = 80	(85.1%)

(I2) SECOND INTERVIEW (13 August - 7 September : Weeks 25-28)

Interview sample			
MATH 113	28	21 male	7 female
MATH 115	7	6 male	1 female

(Q2) END-COURSE QUESTIONNAIRE (1 - 5 October : Week 32)

Course enrolment (30 September)		*Questionnaire Response*	
MATH 113	299	N = 188	(62.9%)
MATH 114	288	N = 201	(69.8%)
MATH 116	96	N = 86	(89.6%)

(I3) THIRD INTERVIEW (5 January - 6 August 1981)

Interview sample			
MATH 113	15	10 male	5 female
MATH 115	3	3 male	5 female

GUIDELINES FOR TEACHING AND LEARNING (IN MATHEMATICS)

the development of guidelines requires consideration of the elements of educational experience, viz., course (and subject), teachers and teaching, students and learning, outcomes and assessment. These are interactive elements which, with the considerable implications of time, are different or idiosyncratic (Novak, 1980) for the meaningful learning of each individual student. There are many other variables that make the prediction of academic performance 'highly inexact' and generalisations inappropriate. Not only is this apparent from the literature, it is evident in the case studies of individual experience.

For a typical course of study, the personal environment or experience of the student (taking a variety of courses) interacts with the course environment at set times (for teaching) according to the timetable, and at optional times (for learning) according to priorities both academic and non-academic. The problem to be solved by teacher and student is how to optimise the limited but unique opportunities provided by a course for the acquisition and retention of meaningful learning. Novak (1980) is an advocate of the general learning theory framework proposed by Ausubel who has offered this generalisation:

> 'If I had to reduce all of educational psychology to just one principle, I would say this: The most important single factor influencing learning is what the learner already knows. Ascertain this and teach him accordingly.' (Ausubel, 1968).

The model in Fig. 4 focuses on assessment as a course requirement and as a principal interaction between subject, teacher and student; it identifies student quality (Imrie, 1983) in terms of knowledge, motivation and skills appropriate to the course, all of which have potential for change as learning outcomes. Above all, the model provides a reappraisal of the role of the teacher as a manager of learners and their educational experiences, and therefore responsible for the quality of the course including the assessment of student performance. The problem to be solved by educational development (Freudenthal, 1981) is the effect that assessment requirements have on changes in student attitudes and skills for individual performance.

Students will enter a course with various individual mixtures of rote and meaningful learning (Novak,1980) generalised as knowledge. If the concept of an entry characteristic (such as knowledge) is to have any significance for teacher and learner, it has to be known. Diagnostic testing not only informs the teacher about the individual as well as the peer group, it confronts the potential learner with an inventory of which the learner is owner and occupier. It also removes illusions of ability, apparent in this study, held by students coming from school to first year at university. The sharing of awareness has direct implications for attribution of responsibility for success(Weiner et al.,1971); a view endorsed by Lindquist (1980):

> 'If students believe that effort is a cause of success and failure, perhaps they will also see that they can have some control over the mathematics they learn by controlling the amount of effort they exert.' (p. 175-6)

Another interpretation of effort is offered by Covington and Omelich (1979). In their study of achievement motivation, they suggest that the achievement process should be viewed in terms of 'the individual's efforts to protect and enhance a sense of competency' rather than primarily in terms of cognitive characteristics.

A two-tier structure for the course is proposed (Imrie et al.,1980). Tier 1 provides for syllabus coverage at lower levels of learning to be practised to a mastery level; Tier II includes higher levels of learning generalised as problem solving. Using diagnostic tests, a (first year) class could be considered to have three groups with reference to rate of learning and to 'sense of competency':

Group 1	lower group concerned with practice of knowledge and skills for competency in most of the topics for Tier 1
Group 2	middle group with competency in all topics for Tier 1 and with some topics at Tier II level
Group 3	higher group with competency in all topics for Tier I and for Tier II in most topics

This structure provides for comparative assessment of the different groups using the common elements of Tier I. It is also consistent with the acceptance of qualitatively different levels of outcomes for student experience in contrast to the requirement of predetermined uniform outcomes (Van Aalst,1980).

In comment on the interaction between teaching and learning, Harlen (1980) identifies the potential of teaching interventions to optimise student level of performance. Assessment is a teaching/learning intervention that can provide feedback for improvement of subsequent performance. In general, in the first half of a course, assessment should not be used for grading so that management of learning can concentrate on the principle issues discussed earlier, of knowledge, motivation and skills, without fear of failure. In terms of mastery, it is the level of attainment that is most important, with 'time taken' as a secondary consideration. This will 'protect and enhance a sense of competency' and engender satisfaction with the educational experience: a desirable outcome for any case study!

REFERENCES

AUSUBEL, D P Educational Psychology: a cognitive view, New York: Holt, Rinehart and Winston, 1968

BLITHE, T M and JOHNSTON, L C 'Evaluation of a Keller Plan Innovation in Mathematics and Teaching'. Aspects of Educational Technology, XI: The Spread of Educational Technology, London: Kogan Page, 282-287, 1977

BLOOM, B S Human Characteristics and School Learning, New York: McGraw-Hill, 1976

CLARK, M J, IMRIE, B W, JOHNSON, L C AND MALCOLM, W G 'A strategy for evaluating university courses (with reference to large first year classes in Pure Mathematics)', Aspects of Educational Technology, XI: loc. cit. 274-81

COVINGTON, M V AND OMELICH, C L 'Are Causal Attributes Causal? A path analysis of the cognitive model of achievement motivation'. Journal of Personality and Social Psychology, 37,9, 1487-1504, 1979

CRONBACH, L J 'The Two Disciplines of Scientific Psychology'. The American Psychologist, 671-84, 1957

CRONBACH, L J 'Beyond the Two Disciplines of Scientific Psychology'. The American Psychologist, 116-127, 1975

DOCKING, R A 'Problems of environmental research at tertiary level'. Brisbane Conference of the Australian Association for Research in Education, 1976, Murdoch University.

FREUDENTHAL, H 'Ways to report on empirical research in education', Educational Studies in Mathematics, 10, 275-303, 1979

FREUDENTHAL, H 'Major problems of mathematics education', Educational Studies in Mathematics, 12, 133-150, 1981

HARLEN, W Response to Van Aalst, 419, in ARCHENHOLD et. al. (Eds). Cognitive Development Research in Science and Mathematics, University of Leeds, 1980

IMRIE, B W 'Grading and Student Quality'. Occasional Paper No. 8, University Teaching and Research Centre, V.U.W., 1983

IMRIE, B W, BLITHE, T M AND JOHNSTON, L C 'A review of Keller principles with reference to mathematics courses in Australasia'. British Journal of Educational Technology, 11,2, 105-121, 1980

KELLER, F S 'Good-bye, Teacher...', Journal of Applied Behaviour Analysis. 1, 78-79, 1968

LINDQUIST, M M (Ed.) Selected issues in Mathematics Education , Berkeley: McMutchan, 1980

McKEACHIE, W J 'Instructional Psychology', Annual Review of Psychology, 25, 1974

McKEACHIE, W J AND KULIK, J A 'Effective College Teaching'. Review of Research in Education Vol. 3, 165-209, 1975

NOVAK, J D 'Methodological Issues in Investigating Meaningful Learning' 129-148, in ARCHENHOLD, W F et. al. (Eds) loc. cit.

PARKYN, G W Success and Failure at the University: Vol. 1, 1959, Vol. 2, 1967. Wellington : NZCER

SMALL, J J Achievement and Adjdustment in the First Year at University, Wellington : NZCER, 1966

SMITH, B O 'A Concept of Teaching', Teachers' College Record, 61, 229-241, 1960

VAN AALST, H 'The Research-Practitioner Interface in Science and Mathematics Education', 397-416 in ARCHENHOLD, W F et. al. (Eds) loc. cit.

WEINER, B, FRIEZE, I et. al. Perceiving the causes of success and failure, New York: General Learning Press, 1971

THE EFFECT OF FORMATIVE TESTING
ON STUDENT PERFORMANCE IN FRESHMAN CALCULUS

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Mathematics, the physical sciences, engineering in all its forms, and many other disciplines share a characteristic orientation toward sequential, task-oriented development. In these disciplines, a student progresses from the basic to the more complex by mastering increasingly more sophisticated concepts and skills in a well defined order. Bloom (1976) argues that failure at any point in such a sequence to master the task at hand not only weakens the student's understanding at the point of failure, but also inhibits his ability to master subsequent tasks. In light of this characteristic, the curriculum must provide some way of dealing with student errors and misunderstandings.

The recognition that individuals process information using a variety of learning styles was used by Gregorc (1982) to develop an instrument suitable for the identification of student learning styles. The intent of the identification of the individual's learning style is to provide the student and educator with data useful in the individualization of instruction. The extent to which a learning process accommodates an individual's learning style may be seen as one measure of the quality of instruction spoken of by Bloom in the Mastery Learning paradigm.

PROBLEM

The purpose of this study was to determine the effect of formative testing, prescribed remediation, and retesting on student performance in freshman calculus when remediation was adjusted to accommodate individual learning styles. The study sought to address this problem with a minimum amount of intervention during classroom time.

PROCEDURES

The experiment took place during Fall Quarter, 1982, at Montana State University. Of the 21 sections of Math 121, Freshman Calculus, offered in the Fall of 1982, six were selected as the sample for this study. At the time of registration, this involved approximately 200 students.

The study designated the group of students receiving weekly formative testing, diagnostic error analysis, prescribed and individualized remediation, and retesting the experimental group. After each quiz, each student received an error analysis based on the use of a table of specifications and remediation structured to accommodate his/her individual learning style. Other than the weekly quiz, no class time was used for these treatments. Students met with their instructors during office hours for diagnostic remediation and went to the Math Learning Center for unstructured help.

The control group students took the same weekly quizzes as the experimental group. The feedback these students received consisted of written notes on their papers and any verbal comments the instructors cared to make. This has been the conventional form of feedback in math classes for many years. Students were encouraged to seek assistance from their instructors during office hours and had essentially unlimited help available in the Math Learning Center.

All the students took the same summative examinations. The dependent variable, student performance, was measured on three one hour exams and a two hour final exam, making a total of 500 points possible. All examination papers were scored by a committee of instructors.

The six sections selected were taught by four instructors. Two of the instructors, a male and a female, taught two sections each of Math 121. The other two instructors, a male and a female, taught one section each. To control for teacher differences, each instructor randomly assigned half of his/her students to the experimental group and half to the control group.

The instructors who taught one section of Math 121 partitioned the section into two groups. The instructors who taught two sections assigned one section to the experimental group and the other section to the control group. For both instructors, these sections met at consecutive hours of the day.

In addition to the data collected on the examinations, the student's learning style was obtained using a Gregorc Learning Styles Delineator. The expected GPA for incoming students was obtained from the university. This information was used in the statistical analysis to look for any interaction of the treatments with either learning style or ability.

RESULTS

For entering Freshmen, the expected GPA calculated by the university was used as an estimate of their ability. For these students of known ability, the main effects test comparing the overall performance of the experimental group and control group rejected the null hypothesis (no difference in performance for the experimental and control groups) at the .05 level, yielding a p-value of .0186. The difference between the group means was about 5.5% of the total points possible. The null hypothesis testing for interaction between ability and treatment was retained, yielding a p-value of .6666.

Overall Performance Means: Students of Known Ability

	Ability Level		
	Low Third of Group	Middle Third of Group	High Third of Group
Experimental	349.7	400.7	458.9
Control	327.4	384.6	419.4

(least significant difference = 12.77, alpha = .05)

For students of unknown ability, mostly continuing students, the null hypothesis comparing experimental and control group overall performance was retained at the .05 level. That is, students who had spent time in college making up deficiencies prior to enrolling in calculus were less susceptible to the experimental treatment than students entering college with all the prerequisites for calculus.

Overall Performance Means: Students of Unknown Ability

Experimental	386.8
Control	378.2

A signs test was used to test the hypothesis that the standard deviations for the experimental group were the same as the standard deviations for the control group on the examinations. This was rejected at the .039 level. The standard deviation scores were significantly less for the experimental group than for the control group.

The correlations between time spent in remediation and overall performance were nonsignificant at the .05 level. The correlations between expected GPA and overall performance were significant at the .05 level.

Relationship of Time Spent in Remediation to Performance

	Pearson r
Experimental	-.09
Control	.006

Relationship of Expected GPA (Ability) to Performance

	Pearson r
Experimental	.7654
Control	.4653

A z-transformation was used to compare these two correlations to test for a significant difference. The null hypothesis (no difference) was rejected at the .01 level. Thus, the strength of the relationship between ability and performance was stronger in the experimental group than in the control group.

Finally, the null hypotheses dealing with learning styles and performance were retained, although the p-value for the sequential/random learning style trait as a factor in overall performance was approximately .10.

Learning Styles and Overall Performance

	Concrete	Abstract
Sequential	409.5	413.6
Random	382.9	377.3

CONCLUSIONS

The researcher has reached the following conclusions based on an analysis of the data collected in this study.

1. The experimental treatment was a superior method of instruction to the conventional approach for entering freshmen.

2. For entering freshmen, there was no aptitude-treatment interaction.

3. For students who were not entering freshmen, the experimental treatment was not a superior instructional method.

4. For entering freshmen, the variance in examination scores for students in the experimental group was less than that for the control group.

5. There was no relationship between the amount of time spent in remediation and overall performance.

6. The relationship between expected GPA and overall performance was stronger for the experimental group than for the control group. Thus, the experimental group treatment was a more effective developer of student talent than the conventional approach.

DISCUSSION

The treatments described in this study produced significant improvements in student performance in a typical introductory calculus course. The mean grade level for the experimental group was a middle B; for the control group, the mean grade was a high C.

Clearly, there is a cost involved in implementing such a program. Extra time and effort is required to prepare the quizzes, diagnostic tables of specifications, and remediation materials. However, once prepared, there is not a significant change in the man hours needed to run the program when compared to conventional methods. One of the most common criticisms of the Mastery Learning and PSI paradigms is that features such as self-pacing, unit mastery requirements for advancement through the course content, and other time consuming activities place too great a strain on faculty and normal institutional operations to consider implementation. This study has demonstrated that significant gains in student performance can be achieved without making massive structural changes in classroom procedures.

REFERENCES

Bloom, Benjamin S. Human Characteristics and School Learning. New York: McGraw-Hill, 1976.

Bloom, Benjamin S. All Our Children Learning. New York: McGraw-Hill, 1981.

Gregorc, Anthony F. Learning/Teaching Styles: Their Nature and Effects. In Student Learning Styles, Diagnosing and Prescribing Programs. Reston, VA.: NASSP, 1979.

Gregorc, Anthony F. Learning Style Delineator. Columbia, CT.: Gregorc Associates, Inc., 1982.

EDUCATIONAL TESTING REVISITED:
THE SIMPLIFIED COMPOUND
BINOMIAL MODEL

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1. Conceptional considerations for designing educational goal-oriented examinations

The articles about educational-goal oriented examinations existing in the literature so far are mainly based on the classic "norm-oriented test theory" of psychology; it is applicable to the population of persons.
The main disadvantage of such tests - part of which are also school performance tests - is, from a pedagogical point of view, inter alia, the not clear enough relation to educational goals, respectively to the content of the curriculum (see LIENERT 1969, CHAUNCEY & DOBBIN 1970, GAUDE & TESCHNER 1970 among others).
Aside from methodic considerations, also the pedagogic argument of encouraging social-positive behavior speaks for educational-goal oriented, and against norm-oriented, examination- and grading methods.
Therefore, the "probabilistic test theory", based on problem populations, seems much more appropriate for building up a theory of educational-goal-oriented examinations (see FISCHER 1974, KLAUER 1972, ULBRICHT 1979 inter alia).
The same as other methods, educational-goal-oriented grading methods also use norms, since the FRANK formula "examination = testing & evaluating" applies to them also (FRANK 1973). Here, the norms can be justified method-immanently.

A review reveals that the existing approaches of the probabilistic test theory for most of the pedagogic applications are bound to much too restrictive, partly even unrealistic prerequisites required of the examinees, respectively with regard to the effectiveness of the teaching-learning process, or they require such a great deal of mathematical work that they are unsuitable for the daily routine of written examinations.

The best known models are the binomial model by KLAUER 1972 - the simplest model of this kind that exists - and the RASCH-model which, in my opinion, however, was connected with an "error of commission" in the former pedagogic field of application - an error which is the result of very far-reaching and, at the same time, partly inadequate hypotheses.

The group of the hypergeometric models avoid the prerequisite that the basic number of questions exist of infinitely many elements.

The group of the poly- ... models, which is mathematically difficult to handle, permits more than two evaluation possibilities for each problem. But the generalization connected herewith is, for curricular reasons, not necessarily desired since, in many cases, a dichotomic evaluation is considered optimal.

Finally, the Compound Binomial Model involves serious problems such as the basic difficulty of parameter estimation and the practical difficulties of doing the necessary calculations (LORD & NOVICK 1968).

2. A new approach of the probabilistic test theory

A new solution to the problem of the educational-goal oriented examination and grading can be found by constructing a new model within the probabilistic test theory.

The probabilistic function characterizing this model is called "Simplified Compound Binomial-Distribution" and is symbolized by $B_U(k_j; p_j, D_j, n)$, $j=1,2..$

This function is in close connection with the Compound Binomial-Distribution, which is to be regarded as an exact model function, and which expresses it in close approximation.

The function B_U depends on the variable k_j (= number of correctly solved problems by examinee j) and on the three parameters: n (= length of examination), p_j (= average problem-solving probability which the examinee j has), and D_j (=dispersion or variance quantity, which represents a measure for the variation of solution probabilities of examinee j with reference to the individual questions).

By the length of examination, the number (n) of questions of an examination is understood which, in a statistical sense, is representative for the practically infinitely large number of possible examination questions.

The parameter values applicable to an examinee can be estimated by the solution vectors which, corresponding to the length of the examination, consist of n components.

In order to estimate D_j, it must be known if a "homogeneous number of problems" (where all problems relate to various aspects of one and the same hierarchically paramount educational goal) or a "heterogeneous number of problems" (where the problems relate to essentially different educational goals) is involved. This can be determined a priori by subject-systematic or logical considerations or, also, a posteriori, perhaps, according to the Q- test by COCHRAN (COCHRAN 1950; FLEISS 1965).

2.1 Description of the Model Function

The model function, i.e. the simplified compound binomial distribution B_U can, in summary, be described as follows:

$$B_U\ (k_j;\ p_j,\ D_j,\ n) =$$

$$\sum_{v=0}^{n-k_j} \frac{(-1)^v\ p_j^{\,k_j + v - 2}}{k_j!\ (n - k_j - v)!\ v!} \left\{ n!\ p_j^2 - \frac{D_j}{2} \frac{(n-2)!\ (k_j + v)!}{(k_j + v - 2)!} \right\}$$

$(k_j = 0, 1, 2, \ldots, n)$

Explanation of the symbols used:

n = length of examination, i.e. number of examination questions;

p_{ij} = probability that examinee j (j = 1, 2,...,N) solves problem no. i (i = 1, 2, ..., n) correctly;

$p_j = \frac{1}{n} \sum_{i=1}^{n} p_{ij}$ = average (arithmetic mean) problem-solving probability of examinee j;

k_j = number of problems solved correctly by examinee j;

$\hat{p}_j = k_j / n$ = estimate of p_j;

$D_j = \sum_{i=1}^{n} (p_{ij} - p_j)^2$ = dispersion or variance quantity;

$\hat{D}_j = \frac{1}{K} (1 - \hat{p}_j)(2\hat{p}_j - 1)^2$ = estimate for D_j with the "coherence factor" K:

$$K = \begin{cases} 1 & \text{for a homogeneous set of problems, and} \\ \frac{1}{n} & \text{for a heterogeneous set of problems.} \end{cases}$$

In other words: $B_U (k_j; p_j, D_j, n)$ indicates for an examinee with the name of j (j = 1, 2, ..., N) the probability to solve k_j problems correctly at an examination length of n problems, at an average problem-solving probability (as capability parameter) p_j, and at a variance quantity (interpretable as efficiency in the problem-solving behavior) of the value D_j. For further details concerning the problem of parameter estimation, which is connected with this special function, see ULBRICHT 1980 a.

It must be noted that B_U, being an approximation to the Compound Binomial Distribution, is, strictly speeking, not a probability function in the mathematical sence.

2.2 Model Conditions

The application of the simplified compound binomial distribution as the basis of a measuring model for the objectified written examinations depends on the following requirements:

(1) The classroom instructions, to which the examination is related, must be course-goal-oriented. (The Tyler educational goal matrix procedure may be

used for this purpose.)

(2) The examination questions must be (stochastically) independent from one another, so that the solution or nonsolution of a problem has no influence on the solution or nonsolution of another problem of this examination.

(3) The individual examination questions are to be evaluated alternatively on the basis of being considered "correct" (1 point) or "incorrect" (0 points).

(4) Sufficient time must be allowed for the examination in order to permit the answering of all examination questions.

(5) The number of questions to be considered for a specific examination can (practically) be assumed to be infinite.

(6) The variance quantity D_j may not be too large, so that the model function B_U, respectively its cumulative, does not leave the normed area {0, 1} in the respective field of work. Whether this condition has been satisfied can be determined in each case of application empirically.

(7) The examination length n should not be too short ($n \geq 5$).

As far as the measuring theory is concerned, the maximal examination length is not defined; but in practice rarely more than 20 to 30 questions are asked. Worth mentioning here is also the fact that no special form with respect to the examination questions is to be adhered to, therefore free answers, multiple choice answers, supplementary questions, inter alia, can be used.

2.3 The holding of a course-goal oriented examination

The course-goal oriented examination- and grading method presented here, is applied inference-statistically, i.e. as a significance test, on the basis of the Simplified Compound Binomial Distribution.

The quantity p_L designates the operationalized educational goal (see appendix). In terms of theory, $p_L = 1$ is to be postulated. Nevertheless, in practice, one frequently finds that $p_L \leq 1$ is used.

First of all, the significance level γ must be established. The quantity $1 - \gamma$

also denoted as "error of the first kind", then indicates the statistical risk for an examinee to be rated as having failed - if the area of confidence belonging to his relative total sum of points does not contain p_L accidentally - when, in reality, he has reached the educational goal.

The area of confidence for the examinee j is defined by the equation

$$\text{Prob } (p_{lj} \leqq p_j \leqq p_{uj}) = \gamma.$$

The lower bound, p_{lj}, and the upper bound, p_{uj}, of this confidence interval can be calculated with the aid of the following conditional equations:

$$\sum_{x_j=0}^{k_j} B_U\ (x_j;\ p_{uj},\ D_j,\ n) = \frac{1-\gamma}{2} \qquad \sum_{x_j=k_j}^{n} B_U\ (x_j;\ p_{lj},\ D_j,\ n) = \frac{1-\gamma}{2}$$

by solving them after p_{lj} and after p_{uj}.

In the case of the ideal course-goal oriented examination one distinguishes only between "passed" and "failed".

The calculation of the confidential area around $\hat{p}_j$, limited by p_{lj} and p_{uj}, is based on the model function B_U, as indicated above. The examinee has passed if his $p_{uj} \geqq p_L$. Otherwise he has failed.

The coordination of the p-scale of abilities with the normal grading scales requires some additional considerations. But the experiences and suggestions of other authors can be used as a basis (e. g. KLAUER & KORNADT 1972 ff.).

With this assignment the examinee j is granted the value p_{uj} taking into consideration the source of error, that is to say the upper limit of his area of confidence constructed around the empirical $\hat{p}_j = {}^{k}j/n$.

Special charts (ULBRICHT 1979) make the routine application of this course-goal oriented examination- and grading method possible up to an examination length of $n = 20$, based on the Simplified Compound Binomial Distribution.

Comparative studies using this new probabilistic approach as well as traditional models have shown very satisfying results up till now, a fact, which can be looked at as an indication of validity (ULBRICHT 1980 b; GALL & ULBRICHT

1981; ULBRICHT & ZIMMERMANN 1981).

But before a general law can be formulated, it will be necessary to undertake further studies based on a larger number of examinees on the one hand and of teachers on the other hand.

REFERENCES

BLOOM,B.J., T.J.HASTINGS & MADAUS (eds.): Handbook on Formative and Summative Evaluation of Student Learning. New York 1971

CHAUNCEY,H. & J.E.DOBBIN: Der Test im modernen Bildungsesen. Stuttgart 1970^2

COCHRAN,W.G.: The Comparison of Percentages in matched Samples. In: Biometrika Vol. 37 (1950), p.256-266

FEGER,H. (Hg.): Strategien der Unterrichtsforschung. Weinheim und Basel 1973

FISCHER,G.H.: Einführung in die Theorie psychologischer Tests. Bern-Stuttgart-Wien 1974

FLEISS,J.L.: Estimating the Accuracy of Dichotomous Judgements. In: Psychometrika Vol. 30 (1965), p.469-479

FRANK,H.: Vom Testen zum Prüfen. In: Prüfungsobjektivierung. 2.Paderborner Werkstattgespräch. Paderborn-Hannover 1973, S.7-43

FREY,K. (Hg.): Curriculum-Handbuch, Bd.I-III. München 1975

GAGNÉ,R.: The conditions of learning. New York 1965

GALL,S.&K.ULBRICHT: Traditionelles und lernzielorientiertes Prüfen in weiterbildenden Kursen "Elektronik" und "Mirko-Computer". In: "Ingenieurpädagogik", hrsg. von A.MELEZINEK, Bd.15. Alsbach 1981, S.427-430

GAUDE,P. & W.-P.TESCHNER: Objektivierte Leistungsmessung in der Schule. Frankfurt/M.-Berlin-München 1970

KLAUER,K.J. & H.-J.KORNADT (Hg.): Studien zur Lehrforschung. Düsseldorf: Bd.1 (1972 u.ö.), Bd.2 (1972), Bd.4 (1973), Bd.9 (1974), Bd.13 (1975), Bd.15 (1976)

KUIPER,C.M.: Meten van Meningen. Dissertation Rijksuniversiteit te Leiden 1977

LÁNSKÝ,M.: Ein informationstheoretisches Verfahren zur Prüfungsrationalisierung. In: Prüfungsobjektivierung. 2.Paderborner Werkstattgespräch. Paderborn-Hannover 1973, S.45-62

LIENERT,G.A.: Testaufbau und Testanalyse. Weinheim-Berlin-Basel 1961 u.ö., hier 1969 (3)

LORD,F.M. & M.R.NOVICK: Statistical theories of mental test scores. With constributions by A.BIRNBAUM. Reading, Mass. etc. 1968

MELEZINEK,A.: Ingenieur-Pädagogik. Grundlagen einer Didaktik des Technik-Unterrichts. Wien-New York 1977

TYLER,R.: Basic principles of curriculum and instruction. Chicago 195o

ULBRICHT,K.: Theorie und Praxis lernzielorientierter Prüfungen in Schule und Hochschule. Reihe "Studien zur Hochschulbildung", Bd.2 Bern-Frankfurt/M.-Las Vegas 1979

-"-: The Simplified Compound Binomial Distribution in an Latent Trait Model for Evaluation of the Learning Success. Paper, presented at the Fourth International Symposium on Educational Testing, Antwerp, Belgium, June 24-27, 198oa

-"-: Comparative Study of some examination and grading procedures. Proceedings of the Sixth Conference "Improving University Teaching (IUT)", Lausanne, Switzerland, p.A 1o4, 921-928, 198ob

-"- & P.ZIMMERMANN: "Problems relating to examinations in three-year technical/natural science courses of study at the Federal Armed Forces University, Munich". In: Higher Education, Vol.1o (1981), 1-23

Appendix: The Tyler educational goal matrix procedure

In order to ensure the satisfaction of the so far uncommented model conditions listed in section 2.2, the Tyler educational goal matrix procedure can be applied (see BLOOM, HASTINGS & MADAUS 1971, FEGER 1973, FREY 1975, MELEZINEK 1977, TYLER 1950).

This procedure is a good aid for completely clarifying and listing the educational goals pursued in the teaching-learning process, from which the examination questions can then be derived.

With regard to the contents, an "educational goal" is determined as element of a Tyler educational-goal matrix.

Operationally an educational goal is determined as the lower limit of the problem-solving probability p_L for the questions of the basic set of questions, which are theoretically under consideration for this examination.

Unfortunately, the known measuring procedures in the area of cognitive, affective and psychomotoric educational goals are of a nature too disparate to be treated here. Therefore, only the following brief remark can be made here:

While, for instance, multiple-choice problems in wide parts of the cognitive educational-goal area have proved to be successful, such problems would, in general, be much too direct for the affective area (see KUIPER 1977).

For quite different reasons the multiple-choice problems are of hardly any significance for the psychomotoricarea (BLOOM, HASTINGS & MADAUS 1971).

The Tyler educational-goal matrix method can, in particular, justify the same evaluation of the problem solutions.

Because if two specialized educational goals on the same specification level of this matrix (GAGNÉ 1965) have been recognized as relevant, there is no reason why problems based on them should be evaluated differently. Thus, this procedure contains the possibility of reducing the performance dimensions problemized in the approach by LÁNSKÝ in 1973.

APPROPRIATE STUDENT PREPAREDNESS AS A FACTOR IN IMPROVING UNIVERSITY SCIENCE LEARNING AND TEACHING; A PREPARATORY CRASH COURSE IN CHEMISTRY FOR UNPREPARED PROSPECTIVE SCIENCE-TEACHER UNDERGRADUATES. (A CASE STUDY).

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Introduction

Since the second half of the seventies, science education in the western world, undoubtedly has been suffering a continuous crisis[1-3]. This state of affairs constitutes a threat to the well-being of the science education enterprise, including chemistry which has not been particularly popular with widely divergent groups of students.[4-5] The short-and long-range consequences of the present trend of decreasing numbers of students who major in one of the scientific disciplines are apparent. Numerous initiatives have been described which attempt to operationally deal with some of the issues and problems associated with the demonstrated diminished capacity of the secondary school and university systems not only to equip students with the skills and learning styles necessary to deal successfully with university-level course work[6], but probably more important to attract them to study science.Clearly, one of the tasks ahead for sound science education is to find ways to increase the number of students who will opt for science in their undergraduate and graduate studies. This in turn means to invest more in unprepared science-orientated students before or within the initial stages of their college studies, particularly in those defined as "attentive" to science[7].

Unfortunately, universities are reluctant to admit adult students who do not have the formal qualifications (i.e. appropriate score averages of S.A.T. in the U.S., or Matriculation certificate or equivalent in Israel and other countries).

Various solutions to the problem of what to do for the students who come ill- or insufficiently-prepared for college science in general (i.e. mathematics, physics, biology, chemistry, etc.) and chemistry in particular have been proposed[8-9]. In this paper, we would like to share our successful experience with others, concerning the possibility of a specially designed course-limited in time-duration, contents and scope-to advance unprepared adult students who are "attentive" to science[7], to the achievements of those defined as prepared according to their formal education and qualifications (i.e. those who posess the formal required certificates). Understandably, the quality of teaching is a key factor in our approach, and the relevance to the issue of improving the quality of college and university teaching is apparent.

The Target Population and Entry Behavior.

The preparatory course we deal with in this paper, was especially designed for a target population of a unique type: It consists of people who are members of the kibbutz movement in Israel, lacking the customarily required matriculation certificate-a pre-requisite for "smooth" acceptance to our universities. Some of them had never studied chemistry and have had a relatively limited background in physics and mathematics. Many of these people are mature family men and women whose intention is to become science teachers after their graduation. Therefore, in order to enable them to start their freshman science orientated graduate studies (i.e. biology, physics and math majors) at a level equal to that of the other students- the bearers of average and above average science-orientated matriculation certificates - they have to take an intensive preparatory-type science program.

Significantly, the average score of the target population group on the university entrance psychometric tests was lower (as one could expect) than that of their counterpart group - the certificate owners. (see below).

The Science-Oriented Preparatory Program

This program consists of four intensive crash courses in mathematics, physics, chemistry and technical (science-oriented) English . The duration of the program is four months during which the students study for five days a week eight hours a day. Total number of hours of the chemistry course - which is our concern in this study - is 60(3 lecture hours per week + 10 laboratory hours).

The final acceptance of the course participants to the college freshman program is contingent on their satisfactorily passing the preparatory program's final exams (in each of the offered four courses). Thus, the sole criterion for success or failure in the preparatory crash courses within the program - is the student's scholarly achievements in the disciplines learned, which are those in which he was mostly unprepared to begin with. However, the final exams particularly those in the science disciplines emphasize the higher levels of thinking[10]; i.e. understanding, application, analysis, and even synthesis, rather than rote and plain knowledge.

The Study And Its Objectives

This paper deals with the chemistry course within the preparatory program and a comparison of student achievements of two different target populations in the freshman chemistry courses (general and organic). The first group (Group A) consists of the unprepared adult students (as described above), whereas the second group (Group B), is that of the ordinary high school graduates - bearers of the science-oriented matriculation certificates. For the first group the preparatory course is mandatory, while the second group is directly accepted to the college science freshman program. Although our study is focused particularly on the chemistry curriculum and student achievements in the particular courses involved, our study should be considered in relation to the general existing problem: how to prepare the "scientifically unprepared" students for successful learning within the university setting. The above issue is directly relevant to improving the quality of college and university teaching.

The objective of the study was to systematically collect and **analyze data** associated with student achievements in the chemistry courses in an attempt to answer the following five questions :

1. To what extent can an approriate preparatory university course improve the cognitive, science-oriented entry capabilities and learning styles of students "attentive" to science?

2. Do the student achievements in chemistry justify the preparatory crash course in chemistry given to them within the program?

3. Does the preparatory program and particularly the chemistry course within - provide the participants with an equal opportunity (at least as far as chemistry is concerned)?

4. Can the final grade of the student in the crash course in chemistry serve as a prediction of success in freshman chemistry courses?

5. To what extent does the preparatory program create a sympathetic atmosphere towards chemistry by decreasing the anxiety of the participants on the one hand, and encouraging their independent work and improved learning styles on the other hand?

Our study includes data on five academic years : 1978/79 - 1982/83.

The Preparatory Crash Course in Chemistry

A brief outline of the course and its contents is given below:
Macroscopic properties of the matter; the gas laws; Avogadro hypothesis and the mole concept. The periodic table of elements; chemical equations; oxidation-reduction; properties of solutions; reactions in solutions; acids and bases; equivalents: molarity and normality.

The subjects of the five laboratory sessions were:

1. Determination of An hydrate formula.
2. Substances behabior during a heating process.
3. Selected Chemistry of Manganese.
4. Properties of ionic aquaeous solutions.
5. Volumetric analysis: neutralization and precipitation reactions.

Results and Discussion

The average scores of the unprepared students-who took the crash science-oriented preparatory program (group A), and the certificate bearers - who were directly accepted to the university (group B) on the nationally administered psycometric tests (U.E.P.T.) for four consecutive academic years 1979/80-1982/83 are given in Table 1 below.

Table 1. Psychometric Test Scores*

	Academic Year				
Group	1978/79	1979/80	1980/81	1981/82	1982/83
A	**	547.9	553.7	534.9	513.2
B	**	559.3	592.5	586.8	542.1

* Group average (n (total) = 111)

** Data not available

The most striking feature of the above data is that the average scores of group B are always higher than those of group A. This finding could be expected, since the U.E.P.T. includes the testing of students proficiency in mathematics, English and other subjects related to formal high school education. In fact, the lower scores of group A, most probably reflect their unpreparedness compared with group B. The student achievement scores in freshman chemistry courses of the two groups later on, should be evaluated in view of the above two levels in the frame of reference.

The average final grades of groups A in the chemistry course within the preparatory crash program in each of the academic years 1978/79 - 1982/83 are given in Table 2 below:

Table 2. Average Final Grades of Groups A in the Crash Course in Chemistry.

Academic Year	No. of Course Participants	Average Score
1978/79	11	71.8
1979/80	13	71.5
1980/81	14	71.6
1981/82	14	71.5
1982/83	15	74.0
	Total 67	72.1*

* Weighted average.

Although the preparatory crash course in chemistry was taught by different teachers during the five years of the study, the student achievements in all the courses were essentially the same. The significance of these scores is in their providing a base line for comparison of these groups' achievements in the subsequent freshman chemistry courses.

The average scores of groups A and B in their freshman general-and organic chemistry courses during five consecutive academic years are given in Table 3 below.

Excluding very few exceptions, the average scores of the two groups in the two chemistry courses each year during the five years of the study are quite similar and do not point to the advantage of one group over the other. Furthermore, since different teachers taught these courses during the years, the evaluations of each separate year are not as significant as the final average for each group in each of the two courses. Clearly, there are no significant differences between the student achievements of the unprepared group (groups A), and the certificate bearers (groups B) in either freshmen general and inorganic or organic courses. Moreover, the learning achievements of both groups in both courses are essentially the same and are but slightly higher than the average scores of groups A in the preparatory crash course in chemistry. These results may reflect the already mentioned fact that higher levels of thinking were emphasized in all the courses as well as in the examinations during the entire study. Highly motivated, matured adult students may benefit from such an emphasis, since they prefer "thinking" over rote and "remembering".

Our data and findings suggest that the unpreparedness of students in a science discipline may be remedied by an appropriate crash course within an appropriate crash program, particularly if both students and faculty are highly motivated. They also suggest that equal opportunities for higher education can be provided to different segments of of populations devoid of the formal requisites - within the existing university systems.

Table 3. Average Scores of Groups* A and B in Freshman General- and Organic Chemistry Courses.

Academic Year	General Chemistry Group A	General Chemistry Group B	Organic Chemistry Group A	Organic Chemistry Group B
1978/79	73.5	71.6	86.0	76.2
1979/80	73.9	72.4	72.4	69.5
1980/81	73.2	74.9	66.5	75.9
1981/82	74.9	74.4	68.8	73.5
1982/83	77.0	83.4	77.4	79.0
Average**:	74.6	74.8	73.8	74.6

* N_{total}=67 in Groups A and 71 in Groups B = 138 students; 11-17 students in each group each year.

** Weighted average.

As far as the objectives of our study were concerned, our findings enable us to conclude the following:

1. An appropriate preparatory university course *can* improve significantly the cognitive, science-oriented entry capabilities and learning styles of unprepared students "attentive" to science.
2. The student achievements in freshman chemistry *do* justify the preparatory crash course in chemistry given to them.
3. The preparatory crash course in chemistry *does* provide the participants an equal opportunity as far as chemistry is concerned.
4. The grades of the unprepared students in the chemistry crash course *can serve as an excellent predictor* of the success of the participants in freshman chemistry.

The contribution of the preparatory crash course in chemistry to the decrease of the anxiety on the part of the participants and the creation of sympathy towards chemistry remains an open question.

Although our case study is somewhat limited in its scope, we believe that it may serve as a possible "first approximation" strategy to be creatively implemented elsewhere under a different set of constraints. Our findings can be generalized and should be used within our continuous striving to improve the quality of university teaching and science teaching within it.

Bibliography

1. Rutherford, F.J. "The Crisis in Science Education", National Science Teachers Association Bulletin, May, 1981.
2. Champagne, A.B., and Klopfer, L.E., "Actions in Time of Crisis", *Sci. Educ.*, *66*, (4), 503 (1982).
3. Yager, R.E., "Crisis in Science Education ". a. Technical Report 21. Iowa City, Iowa: The University of Iowa (1980). b. *Amer. Biol.Teacher*,*44*. 5 (1982).
4. Zuur, A., and van Santen, J., "The Blackhole in,Chemical Education", *J. Chem. Educ.* *60*, (5), 407 (1983).

5. a. Column in Educ. in Chem., 12, 2 (January, 1975).

   b. Mini-Chiuz in Chem. in Unserer Zeit, 15, A (60) (1981, nr.5).

   c. Yager, R.E., "Science Education", in ASCD-Curriculum Update, Sept. 1981.

6. Lagowski, J.J., "The Promise of the Future", J. Chem. Educ., 60, (8), 615 (1983).

7. Yager, R.E., What Research Says to the Science Teacher, Vol. 4. National Science Teacher Association. Washington, D.C., 1982.

8. Zoller, U., "Science Teaching and Learning in Future Higher Education: Future-Oriented Projects of Interdisciplinary Science Curriculum Development (The Israeli Connection)", Bull. Sci. Tech. & Soc.(submitted).

9. a. Morse, E. and Clapp, L.B., "Another Choice for the unprepared Freshman", J. Chem. Educ., 57, (1), 61 (1980) and references 1-6 cited therein.

   b. Zoller, U., "Chemistry of Man's Environment", J. Chem. Educ., 54, (7), 398 (1977).

10. Bloom, B.S., Taxonomy of Educational Objectives: The Cognitive Domain, Mckay, New Yord, 1956.

INDIVIDUALIZED DISCUSSION PAPERS

FRIDAY, 6 JULY

1330 - 1430

AN EXPERIMENT IN INDEPENDENT LEARNING in a HUMANITIES DEGREE

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In 1980/81 the Humanities Department of Brighton Polytechnic redesigned its BA(Hons) Combined Studies(Humanities) degree for validation by the Council for National Academic Awards. The opportunity this exercise provided was used to make a number of changes in the degree, and particularly to introduce an innovation in the form of the Independent Learning Assignment (I.L.A.).

In thinking about the rationale and aims of the degree, the Course Team were acutely aware of the need of any degree course to stimulate creative and analytical thinking. We wished to avoid designing a course in which the emphasis was upon the students receiving tuition and guidance from tutors and then simply regurgitating what they had received in essays and examinations. In consulting the guidelines provided by the C.N.A.A. we were struck by the characteristics used to define the Honours, as opposed to the Ordinary, degree student:

> 'In particular an Honours graduate might be expected to have attained a higher level of intellectual and imaginative development and to have demonstrated more initiative in the independent treatment of problems, and greater ability to relate and apply what has been learned than the degree graduate.'

This statement presented us with a challenge to incorporate into our new Course some element or strategy that would require students to demonstrate 'initiative in the individual treatment of problems, and ability to relate and apply what has been learned.'

Our response to this challenge was to introduce into the degree a one-term independent learning assignment in which all students on the Course would be required to design their own programmes of study, to take the initiative in establishing contacts and making arrangements to carry out their programmes, and to relate what they were learning in the Course to the wider world beyond the Polytechnic campus.

It was decided that the summer term of the second year should be set aside for the I.L.A., that during that term timetable constraints would be removed, and students would be required to construct and carry out their own programmes of study. In this exercise the students would have the opportunity to reflect upon the first five terms of the Course; to ask what particular insights this had opened up for them; and to pursue some matter of particular interest in which curiosity had been aroused. They could also use the term to explore areas and methodologies relevant to the Course but based in other disciplines. Additionally, such a term might offer the possibility of a suitable placement, and travel or residence that could not be part of the normal Course could be included here. Above all, the term of independence would provide students with the opportunity to relate their subject knowledge to particular questions or problems met with in the outside world.
The rationale of the I.L.A. declared:

> 'In the I.L.A. independence is taken to mean the exercise of personal responsibility. It is an opportunity for students to experiment, to learn by discovery, to evaluate their successes and failures and hence to promote in them the degree of understanding which comes from personal responsibility and involvement. It means having to work within constraints, such as those of available resources and the aims of the course.'

The rationale sounded modest enough. But for students and staff it involved a change of revolutionary proportions. Staff would have to let go of students. They would somehow have to learn to allow students to take the initiative in planning a term's work, and inhibit their natural tendency to feed the suggestions and insights which normally fall like confetti around the special interests of academic specialists. Students, too, would have to learn to let go. Their term's programme would have to be entirely of their own devising. How difficult would they find it to let go of the comfort of structured classes, to think their own thoughts about their subjects, bereft of the constant guidance of the great minds upon which they normally depended?
We were helped in taking our new step by the experience of others who had experimented with various kinds of independent learning. We noted the writing of such pioneers as Tyrell Burgess,

suggesting that problem-solving is the basic method of effective education, and that the fundamental learning strategy, from the new born baby to the research worker, is based on formulating and solving problems and testing solutions. [1] We were encouraged by research findings which suggested that students in all fields of study believe that they would learn more, and enjoy learning more, if they had greater control over the pace of their learning, more chance to determine the subject matter of their courses and greater opportunity to cross traditional discipline boundaries.[2] We took careful note of two successful examples of independent study in higher education. One was the School of Independent Studies at the North East London Polytechnic, established in 1974 and now offering a Dip.H.E. and a B.A. in Independent Studies. N.E.L.P's method was to invite students to bring a problem (often one related to everyday life and work, since the N.E.L.P. programme attracted many mature students) and then to invite them to devise ways of solving it. The School of Independent Studies arranged some group work and method seminars, but those constituted the only 'formal' teaching outside of tutorials. N.E.L.P's experience was an important stimulus to our own thinking about the I.L.A. The School of Independent Studies at the University of Lancaster, established in 1973, also provided a useful model.[3] Here, too, the intention was to stimulate creative thinking and a problem-solving approach to higher education. At Lancaster students do not pursue an entire degree in Independent Studies. They may take a Major (approximately two-thirds of Years two and three) or a Minor (approximately one-third of Years two and three) in Independent Studies. Additionally or alternatively, they may take a 'free-ninth' (one ninth of Year One) in Independent Studies. In conversation with some of the students of the School, I found that many of them regarded themselves as a special category among undergraduate students; they were a different kind of people because they undertook independent studies, and perhaps because of this they were sceptical of the outcome of our I.L.A., in which all Combined Studies students have to undertake a term's independent study. They seemed to feel that this would be beyond the ingenuity of some members of a normal B.A. course. This was a point which would be confirmed or denied by the experience of attempting to have all students undertake independent learning for one term of their course. But it seemed to us that the fostering of 'initiative in the independent treatment of problems, and greater ability to relate and apply what has been learned', was something that should be encouraged among all students, and that all should be challenged to develop the qualities most clearly called for in independent studies.

The degree course of which the I.L.A. was part was validated by the C.N.A.A. in January 1981. The visiting panel which scrutinized the Course paid particular attention to the I.L.A., appeared to be sceptical about some aspects of the proposal (e.g., 'what will you do about the student who simply goes and sits on Brighton beach for a term?'), but were trusting enough to allow the innovation on condition that we reported back on the progress of the I.L.A. after two years.

The degree programme of which the I.L.A. is part has a Major/Minor structure. The Major (in Geography or History) occupies approximately two-thirds of the programme, and the Minor (in English, Physical Education, Religious Studies, Sociology, Geography, or History) approximately one-third. An I.L.A. has to be completed for both the Major and the Minor by every student.

Two important decisions taken early in the planning were:-

(i) that the I.L.A. should occupy one term only. Among the reasons for this were:

    (a) we were already committed to a tried degree programme (originally validated by the University of Sussex), and did not wish (nor could we have persuaded our colleagues) to set aside completely what we regarded as a very good course.

    (b) we wished to see all students on the Course have the experience of independent learning, and recognized that if we were to offer a degree or a large part of a degree in independent studies, we should have to make independent learning optional (as it is, for example, at Lancaster). It seemed to us that the challenge of devising a programme of study, testing assumptions made in the conventional part of the Course, and using skills to answer questions encountered in the outside world, was one which all students should be prepared to meet.

(c) we recognized a need to test out our suggested innovation, and harboured the hope that if the I.L.A. were successful we might wish to extend it at a later date.

(ii) Following upon this was a second decision, to place the I.L.A. in term 6 (the summer term of the second year). Among the reasons for this were:-

(a) the students would have experienced almost two years of the Course, and have had time to accumulate a body of knowledge and develop skills which could be used in the I.L.A.

(b) their first five terms would have provided students with questions to answer, and interests and areas they might wish to explore in greater depth.

(c) the I.L.A. at the end of Year 2 would provide a preparation, especially in terms of methodology and of working independently, for the advanced work of Year 3.

(d) some students might wish to go abroad for their I.L.A. work, and a summer term I.L.A. would enable them to extend their visit into the summer vacation.

The first cohort of students entered the new degree course in September 1981, and therefore came to the I.L.A. in the summer term of 1983. Preparation of the students for the I.L.A. began in the second term of the Course, in March 1982. A letter was sent to all students reminding them that in the summer term of their second year they would be freed from the normal constraints of the timetable in order to work on projects of their own choosing, and that it would be their responsibility to devise suitable programmes of study. The letter explained:-

> 'The main aim of the ILA is to encourage the habits and skills of independent learning by giving students the opportunity to devise their own plan of learning for one term. Additionally, it is envisaged that the ILA will build upon work done in years 1 and 2 and enhance knowledge and/or skills that will be useful in year 3.
>
> The term provides an opportunity to pursue some matter of particular interest in which curiosity has been aroused, to reflect upon the first five terms of the course, and to enquire into new insights which have been opened up as the course has progressed. The term will provide an opportunity for you to evaluate your own successes and failures, and your own evaluation of the programme you have planned will

> form an important part of the assignment.
>
> It is possible to use the ILA term to work away from the Polytechnic, and so to use outside resources or to explore aspects of your subject which are not normally covered in classroom situations. To do this, however, you have to persuade tutors that appropriate resources are available elsewhere, that a suitable programme can be carried through, and that supervision can be arranged.'

In November 1982 a second letter was sent to all the second year students (following a meeting with the whole group of 66 students) providing a timetable for the submission of their proposals and giving them the names of tutors for their first reference. At this stage students were provided with forms on which to submit their proposals. The I.L.A. form asked students to indicate the aims of their project clearly, to provide a description of the proposed programme, stating what resources would be required, and to complete a schedule showing practical arrangements. The proposals were discussed with tutors who offered advice about the viability of students' projects whilst leaving the responsibility for negotiating an acceptable programme with the students.

Staff were given check lists to help them evaluate the proposals. A Panel, consisting of the I.L.A. Co-ordinator, the Course Leader, and representatives of all the subjects, met twice in March to consider the proposals. Most were approved at the first meeting; some were referred back to students for clarification or amendment.

All the students in the first cohort had produced feasible proposals by the end of the Spring term. The level of interest and enthusiasm appeared to be high. At the time of writing, the second cohort are in the process of preparing their proposals for the Summer term of 1984.

At the end of the I.L.A. term students were required to submit two reports (one for the Major and the other for the Minor) as part of coursework requirements. It was stressed that the reports should include substantial evaluation of the projects as a reflection on the learning experience of the students.

The first I.L.A. programmes revealed an encouraging variety of interests and approaches, and showed that students responded to this part of the Course with enthusiasm and imagination. There was a total of 66 students, and so 132 projects. 58 of the projects were undertaken away from the Polytechnic and Brighton, and 13 students spent the term overseas, in France, Belgium, Switzerland, Portugal, Italy, Egypt, Israel, the U.S.A., and Canada. For this they had to provide their own funding. It would be naive not to assume that for some students the opportunity of planning an adventurous holiday may have come first, and the necessity of completing a project second. Nevertheless, the willingness of many to travel on the whole seemed to indicate a good level of commitment. Indeed, some students were disappointed at the light weighting given to the I.L.A. report in assessment (the report can be submitted for final assessment, but does not have to be. If submitted, it counts for the same as one essay). The policy on assessment was partly the result of our hesitancy in planning, in not wishing to impose too heavy a burden on students in an innovative part of the course.

If the students on the whole were enthusiastic, the response of staff was more ambiguous. Some staff (and especially those who had been involved in the original planning and later on the I.L.A. Panel) were enthusiastic. But many others appeared to have retained considerable suspicion of an exercise which departed in various ways from more conventional academic activity. These differences became particularly obvious when the time came to mark reports. The reports were first distributed to the tutors who had acted as specialist subject tutors. In an attempt to ensure reasonably even grading across subjects, the reports were later distributed among members of the I.L.A. Panel for second marking, ensuring that the second marking was done by a tutor from a different subject. It was at this stage that the most difficult problems emerged. Members of the Panel, following the intention of the I.L.A., paid particular attention to the students' evaluation of the learning process involved in their projects. Second marking revealed that some subject tutors had done this, but by no means all. In spite of many discussions among staff, and the provision to staff of all the written advice given to students, there clearly remained some tutors who were unwilling to assess a piece of work other than in very conventional academic, subject-orientated, terms. Here work remains to be done in the department. It may just be possible that staff perceptions of student learning could be influenced by the I.L.A. experience, as we hope that student work in the third year (e.g. in seminar performance) will be improved.

So far as we have gone, the I.L.A. appears to have been a worthwhile experiment, and one which could be reproduced in other similar courses.

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1. Tyrell Burgess, Education after School, Gollancz, 1977
2. J.L. Brennan & K.A. Percy, 'Instructional Design in Higher Education - Innovations in Curricula and Teaching' - Proceedings of Conference at Louvain, Belgium, August 30-September 3 1976. European Association for Research & Development in Higher Education, 1976.

   See also, David Bond, Developing Student Autonomy in Learning, Kegan Paul, 1981
   The Nuffield Group for Research and Innovation in Higher Education, Towards Independence in Learning, 1974.
3. See Keith Percy & Paul Ramsden, Independent Study - Two Examples from English Higher Education. Research into Higher Education Monographs, Society for Research into Higher Education, 1980.

Appendix

Some examples of I.L.A. Projects, 1983

Geography

The reduction in organic matter content in Sussex chalk soils

Family migration and its geographical implications

A study to identify the causes and consequences of changes in land and building use in Brighton's centre over the past century.

The economic development of an Israeli Kibbutz

Labour and industrial location in the south east

The social and economic effects of the T.T. races on the Isle of Man

History

A report on archaeological excavation, generally, and with particular reference to a site at West Row Fen, Mildenhall

The settlement and growth of the township of Salisbury, Connecticut

The local Labour Party in Brighton, May-June 1983

Arthur Wagner, his Tractarianism and its reflection in the church architecture commissioned by him in Brighton

Local history resources in libraries

British views of the Warsaw rising of August-September 1944

English

Writing a short story

A criticism of Tom Stoppard's latest play, The Real Thing, directed by Peter Wood

What factors condition the choice of plays performed by drama groups in the Brighton area?

Physical Education

The influence of Dance on mentally handicapped children

The Prince Regent Pool - what level of success has been achieved in view of the original forecasts and what is it likely to be in the future?

A study of football hooliganism at Brighton and Hove Albion Football Club

Religious Studies

A Polish community in Britain and the Catholic Church

The problems for teenagers of reconciling some scientific ideas with the Christian Faith

The role of the Buddhist Community in West Sussex

Sociology

An examination of women in the Kibbutz in relation to employment

The social and cultural background of a small group of prisoners and their attitudes towards education both at school and at prison in Lewes

The influence of religion on women in modern-day Egyptian society

TEACHING ALCOHOL STUDIES TO UNDERGRADUATE STUDENTS: CURRICULUM DESIGN AND SOURCES OF INFORMATION

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Courses devoted exclusively to the study of alcoholism in the social and behavioral sciences are a rarity in undergraduate curricula. If discussed at all, alcoholism is usually examined as a single component in survey courses on deviant behavior, social problems or medical sociology, in courses on personal pathologies or abnormal psychology, and occasionally in medical anthropology. Alcohol studies, though more frequently offered at the graduate level, have been more the province of social work, counseling and clinical psychology programs where the prospect of post graduate employment in delivering treatment or prevention services has been a motivating force.

Perhaps one reason for the dearth of undergraduate social or behavioral science courses focussing on alcohol problems is that, by its very nature, alcoholism is a problem which invites multidisciplinary study. Biological, chemical, psychological and sociological theories have all been proposed to explain alcoholism with at least one authority arguing that the best approach to its study is a multidisciplinary one (Keller, 1975). Yet, multidisciplinary courses on any topic are often difficult to develop, since they require coordinating faculty and teaching resources across departmental lines. In addition, instructors face what can be an enormous challenge of acquainting themselves with complex theories and research covering medical and genetic bases of alcoholism, pharmacology, as well as the massive body of literature generated in psychology, sociology and anthropology. Second, the shift in scholarly opinion and public attitudes over the past 30 years from that of alcoholism as a moral issue toward a view of it as a disease has resulted in the medicalization of a problem that might more appropriately be seen as social in nature. Third, until quite recently social sciences in general have been unresponsive to a declining job market for their graduates by their failure to rethink curricular options for undergraduates.

Courses on alcohol studies in the Department of Sociology have been part of the curriculum for more than 10 years. In fact, their popularity and interest among students suggests that others may need to consider developing similar courses or programs. In this paper, elements of the Massachusetts curriculum are described and major sources of information are provided toward the end of providing points of departure for developing similar courses in sociology and other disciplines.

Having briefly examined why the study of alcoholism is of great sociological relevance, we turn now to a description of an undergraduate sociology curricula at the University of Massachusetts/Boston where students may concentrate in the field of alcohol studies. We begin with a discussion of the genesis and history of the program.

The Concentration in Sociology of Alcoholism: History and Overview

The initial course, entitled, "Research Studies in the Sociology of Alcohol Addiction," was developed in 1972 during a period of rapidly expanding enrollment, liberal funding of educational programs and during an era where academic learning and student demand favored "relevant" courses focusing on social problems and social action. In its first offering in 1973, the course drew the single largest enrollment of all upper-division courses in sociology and among the largest in the University. It is even today especially noteworthy that the alcoholism course--far more than standard sociology courses--tends to draw not only a wide variety of sociology majors, but also students from other disciplines, both special, non-matriculated and matriculated. With epidemiological studies reporting a combined total of more than 20 million alcoholics and problem drinkers, it is from a statistical standpoint increasingly difficult nowadays to locate a person who neither has had a drinking problem nor suffered adverse consequences of a relationship with an alcoholic or problem drinker. Thus, similar to heavily enrolled courses, such as social deviance, social problems or abnormal psychology, many students seem to be drawn to the course out of a personal rather than purely academic motivation.

Experience in teaching the course led to a conclusion that it was at best difficult to cover in a single semester an adequate sampling of literature and alcoholism resource materials in etiology and theory, prevention and treatment. The introductory course was subsequently divided into two parts: "Alcoholism: Etiology and Epidemiology" and "Alcoholism: Treatment and Prevention." This decision proved wise, not only because it allows the luxury of more time in which to cover essential materials in each area, but permits students with a deeper interest to extend further into the field (and often to explore career ambitions). Both courses offer ample occasions in which to tap resource persons for special lectures (e.g., physicians and nurses, practicing clinical psychologists, alcoholism counselors, social workers, and representatives from Alcoholics Anonymous, Al-anon or Alateen), as well as occasional guest lecturing by colleagues in related disciplines (anthropology and psychology, in particular). There are nearly unlimited possibilities for the creative use of audio-visual media, and the occasional use of special site visits or field trips (hospital treatment centers, an open meeting of AA) will generate a reality dimension to the subject matter.

Due in part to continued heavy enrollment and student interest in both first- and second-level courses, a field-based practicum, entitled, "Alcoholism Agency Experience," was developed and implemented in 1978 to provide students with internship opportunities in community agencies serving alcoholics. Similar to conventional internships, students are placed in agency settings--hospitals, half-way houses, referral centers, administrative agencies coordinating state or local programs, prevention or education centers--under the supervision of field-based staff and the course instructor. The course serves as a final test for students who have developed strong interest in pursuing post-graduate careers or education in alcohol studies.

Not all educational institutions will match the circumstances at the University of Massachusetts/Boston, neither will many community locations offer the abundance of agency field sites available in Metropolitan Boston. Nevertheless, a closer look at the three-course alcoholism curriculum suggests some of the ways in which one can partition the subject matter into an undergraduate course or reveal components from these that can be adopted into existing courses.

o Sociology 466 Alcoholism: Etiology and Epidemiology

> An indepth interdisciplinary analysis of the nature, causes and extent of alcoholism and problem drinking. Analysis of drinking patterns and drinking problems crossculturally and among subgroups in the population such as women, prison inmates, the elderly and residents of skid row.

The goal of this course is to introduce students to the subject of alcoholism by examining competing models and etiological theories of alcoholism, the incidence and prevalence of alcoholism and problem drinking, and drinking practices across cultures and among subgroups of the population. The course focuses on drinking behavior in general, rather than solely on drinking problems. Subjects are approached initially from a theoretical perspective to provide students with a grounding in issues which are basic to the field. The course provides students with an overview of the alcohol field which includes consideration of the nature of alcoholism and other drinking problems; the patterning and extent of drinking and drinking problems; and alternative etiological explanations of alcoholism and problem drinking. Among the topics examined are: macrosociological analysis of the effect of social structure and culture on drinking patterns; microsociological analysis of the interaction of drinking with family structure and criminal careers; a social psychological focus of the effect of sex roles and personality on drinking behavior; an analysis of drinking subcultures; a consideration of drinking as small group activity; and a focus on methodological issues involved in the definition and measurement of alcoholism and drinking problems.

o Sociology 470 Alcoholism: Treatment and Prevention

> An intensive examination of theories and research on problem drinking and alcohol addiction with special emphasis on their implications for treatment, prevention and education programs. Topics include: varieties of therapeutic methods; sociological factors influencing diagnosis and treatment outcomes; models of alcohol abuse prevention; special attention to Alcoholics Anonymous and related groups; and social policy responses to drinking problems and alcoholism.

Having laid the groundwork for the study of alcoholism, the next logical progression is an examination of the response to alcoholism as a social problem of enormous scope. One of the main objectives of the Treatment and Prevention course is to illustrate how and why treatment and prevention efforts are largely determined by one's definition and perceptions of the causes and extent of alcoholism and problem drinking. For example, if one is a firm believer in the disease model of alcoholism then resources would probably best be directed toward medical treatment; in contrast, if one believes that alcohol abuse is largely a response to social stress (be it job loss, marital strife, etc.) then resources would probably be best directed initially in the direction of prevention, alcohol information and education.

In keeping with the interdisciplinary character of the field, this course examines: alternative treatment methods (pharmacotherapy, behavioral assessment, individual and group therapy, family therapy, support therapy such as Alcoholics Anonymous); treatment contexts (inpatient, outpatient, detoxification, halfway house); treatment goals (total lifelong abstinence versus controlled drinking); analysis of social structure and process in treatment programs; strategies for intervening into alcohol problems (particularly in occupational settings); evaluation of alcohol treatment programs; examples of prevention, information, and education efforts and their impact upon drinking behavior; and analysis of social policy responses to alcoholism.

o Sociology 469 Alcoholism Agency Experience

> Supervised field work and internship in a community agency serving alcoholics, including alcoholism prevention and treatment and alcohol education projects. Assignments are made according to student interest and internship availability.

> Course also includes seminar focusing on social services for alcoholic populations, techniques of gathering information, case studies and field-based issues.

Because agencies are understandably reluctant to train and assume supervisory responsibilities when interns can devote only a few hours each week, the course was structured into a six-credit semester format. Using a formula wherein students are expected to allocate two hours of outside preparation for each hour spent in the classroom, the course entails up to 18 hours of a student's work week. Since in-class seminars and lectures consume approximately five hours weekly, students are required to devote on the average 12 to 13 hours each week to their agency service.

There are three principal objectives of the agency course: (1) to provide students with a high-quality, intensive exposure to the work of agencies focusing on alcohol problems; (2) to offer students an exercise that parallels the job application process; and (3) to enrich the student's understanding of the relevance and utility of sociological theory, concepts and research to reality of providing services to alcoholic populations. As an added bonus to job-seeking students, the agency course often permits interns to make contacts that prove highly useful in securing entry-level jobs following graduation. In the five-year history of this course at the University of Massachusetts/Boston, more than 60 percent of the enrollees have secured actual job placements in the agencies where they served internships.

From an academic standpoint, the most important objective is perhaps the third: enhancing a student's understanding of sociology's contribution to the field of alcohol studies and alcoholism services. To a certain extent, this is almost a natural event, inherent in the very activities of the internship: observations of alcoholic clients will test the "goodness of fit" of studies describing genesis, course and patterning of alcohol addiction; working in alcohol education projects helps to develop the ability to evaluate the effectiveness of programs and curricula; gathering case histories confirm or alter ideas on the etiological significance of early drinking experiences, family background and other causal variables; and observations made in client-counseling sessions, taken collectively, promote better understandings of the socio-psychological antecedents and consequences of alcoholism and alcohol abuse, as well as both an intellectual and intuitive grasp of counseling theories.

Sources of Information

Both experts and novices attempting to keep abreast of developments in the field of alcohol studies have at their disposal a number of excellent resources. The first is the National Clearinghouse for Alcohol Information of the National Institute on Alcohol Abuse and Alcoholism. The Clearinghouse is the arm of the NIAAA charged with disseminating research findings, conducting public information, prevention and education campaigns, and assisting researchers and clinicians keep abreast of developments in the field. The Clearinghouse conducts, free-of-charge, computerized literature searches across a range of topics producing a printout of article and book abstracts in the requested area along with copies of selected readings. The Clearinghouse also offers subscriptions to the Alcohol Awareness Service which provides an annotated listing of the latest alcohol information, complete with availability and ordering information. Contact: National Clearinghouse for Alcohol Information, P.O. Box 2345, Rockville, Maryland, 20852. The NIAAA also produces through the Clearinghouse, the quarterly journal, *Alcohol Health and Research World*, which is primarily directed toward those with an applied or practitioner focus on alcohol studies.

A second valuable resource is The Center of Alcohol Studies at Rutgers University. Home of the prestigious *Journal of Studies on Alcohol*, the leading journal in the field, the sponsor of the annual Summer School of Alcohol Studies, the Center houses a library through which literature searches are done for a nominal fee. The Center has also published a number of the classic monographs in the field which are available for purchase from its business office. Contact: The Center of Alcohol Studies, Rutgers University, New Brunswick, New Jersey 08903.

Still another major source of alcohol literature, specialized research materials and instructional aids is the Addiction Research Foundation (ARF). The ARF is an agency of Ontario Province in Canada, providing research, educational, clinical and community service development programs. The Foundation publishes a monthly tabloid, The Journal, a "fact sheets" series and maintains a major listing of publications available at nominal cost. For information, write to: Marketing Services, Addiction Research Foundation, 33 Russell Street, Toronto, Ontario CANADA M5S 2S1.

The Hazelden Foundation, widely regarded as a front-runner in the rehabilitation of alcoholics and drug addicts, has a vast array of resources in the alcohol field including films available for rent, books, and pamphlets. To obtain a copy of Hazelden's catalog of service write to: Customer Service Department, Hazelden Foundation, Box 176, Center City, Minnesota 55012.

Those who are interested in publications and program materials which are more practitioner-oriented should contact the Publications Department and Department of Prevention and Education of the National Council on Alcoholism, Inc., 733 3rd Avenue, Suite 1405, New York, New York 10017, (212) 986-4433.

Alcoholics Anonymous also maintains archives on alcohol literature especially oriented to the history and activities of AA, as well as AA publications useful in alcohol education components. Contact: General Services of AA, Inc., 468 Park Avenue South, New York, New York 10016, (212) 686-1100.

In addition to Alcohol Health and Research World and the Journal of Studies on Alcohol, other alcohol journals include:

- Alcoholism: The National Magazine
- Journal of Addictions
- International Journal of the Addictions
- British Journal of Addictions
- Addictive Diseases: An International Journal
- Alcoholism Digest
- Contemporary Drug Problems: A Law Quarterly

Audio-Visual Sources

Alcohol studies enjoys the advantage of having a large number of high quality audio-visual media available as instructional aids. These include cassette recordings, slides and transparencies, and especially film or video media. Used creatively, these can enhance student interest in the curriculum and simultaneously introduce important, technical information into the course.

The very multidisciplinary nature of alcoholism often presents a problem to the instructor with limited background and preparation in medical areas of the field (physiology and metabolism, alcohol-related diseases and impairments, FAS or Fetal Alcohol Syndrome, pancreatitis, endocrine malfunctions, liver disease, etc.), in the pharmacology of alcohol, and even in psychological disorders due to long term alcohol abuse. Although these topics need not be covered in depth, an introductory course in particular should minimally require that students are aware of these aspects of alcohol addiction. Video media can be especially useful in fulfilling these course obligations. For example, the film, "Drinking," introduces the student within the span of 21 minutes to physiological and behavioral effects of alcohol ingestion, as well as the extreme consequences of prolonged alcohol abuse. Segments from Father Martin's now classic films, "Chalk Talk on Alcoholism," offers similar information.

Yet, film media can also contribute a reality dimension to the understanding of the genesis, course and patterning of alcoholism from an emotional standpoint that is difficult to capture in scientific literature. This intuitive, emotional understanding is especially important when the audience is comprised of students with limited knowledge of alcohol abuse or with no first-hand experience with alcoholics. Films such as, "I'll Quit Tomorrow," or "Soft as the Heart of A Child," are especially effective in conveying the emotional impact of alcoholism on the drinker and the family, as well as the configuration of medical, social and psychological symptoms of alcohol addiction.

An extensive annotated listing of recent films and videos is available as an appendix to this paper. Authors should be contacted directly for a copy.

DOMINANT TEACHER STUDENT ORIENTATIONS: TRENDS IN ENGINEERING EDUCATION

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Engineering Education: A Brief Note

Engineering education received an impetus in India during the post independence period. This period witnessed the emergence of a series of 5 year plans which placed critical emphasis on the development of engineering colleges to take care of India's need for a technologically equipped manpower.

In 1947, the year India gained independence, the number of institutions imparting technical skills was 38 and by 1961 the number has shot up to 143 with an approximate enrollment of 25,000 students. Out of the existing institutions the premiere institutes imparting engineering education are the five IITs: - Indian Institutes of Technology. With a vast reservoir of resources for research, and a synthesis of practical and theoretical links in engineering education, the five IITs have emerged as the utopia of educational milieu for the intellectual cream of the nation. Admission to these institutes is based on a highly competitive examination. Once admitted the students have a highly stimulating environment of science subjects, specific specialisation courses in any one of the selected branches of engineering, laboratory exercises, project work, and a few, highly select courses in Humanities and Social Sciences.

Study Objective

To optimise the native potentials of the students in the IIT and to provide an ideal academic environment, a probe into the dominant teacher and student orientations was planned. This would lend insight into the student and teacher orientations in a few specified areas deemed to have an impact on student motivation and faculty productivity.

For this purpose educational literature was perused to reveal a questionnaire which would enable the researcher to obtain information about the teacher-student orientations. The questionnaire to be used for the present study was adapted from the questionnaire used by the Carnegie Commission on higher education. The three questionnaires used by the Commission, the Faculty, the Graduate, and the Undergraduate questionnaires, were studied in depth and only those items which were suitable for the Indian technological climate and were representative of a few critical dimensions were included for the present study. The dimensions studied were: Student Management Dimension, Academic Management Dimension, Social Issues Dimension, Teacher Behaviour Dimension and the Administrative Function Dimension. Such an attempt to study the teacher/student orientation is one of the pioneer attempts in engineering education in India. Such an attempt should be taken up on a much more larger and exhaustive scale.

The Study Methodology

The present study was modelled on the National Survey of Faculty and Student Opinion for the *Carnegie Commission on Higher Education* between 1968 and 1972. The survey was sponsored by the Carnegie Commission and the American Council on Education.

For the present study, data was collected on the adapted questionnaire (See Appendix A), from 300 teachers and 300 students of engineering education, from all the five IITs in India. The teachers selected as respondents belong to the four categories of Lecturers, Assistant Professors, Associate Professors and Professors. The students included in the study were chosen from all the five years of study were chosen from all the five years of study (which is the number of years needed to complete the Bachelors of Technology degree) and from all the existing engineering specialisations. The 600 respondents were chosen with the help of random sampling measures.

The Questionnaire Clusters

The Questionnaire items were initially clustered into the five prior mentioned dimensions which are defined as follows:

Student Management Dimension: This dimension is represented by item number 1,2,3,6,7,8,9,18,20. The items under this dimension reveal orientation of students towards factors like institute rules governing student behaviour, the grading system, student representations in the Institute policy making bodies, and also displays the responsibility and authority measures (as felt by the students), to be vested within the student community.

Academic Management Dimension: The items 10,11,12,13,14,15,17 were clustered under the Academic Management Dimension. This dimension discusses in detail the content, aims and modes of evaluation characterising the academic system of the IITs. Items discussed here range from the emphasis that should be given on practical training within the engineering course, on making the courses job oriented and on making all courses elective.

Social Issues Dimension: This dimension involves an awareness of certain critical social issues. It takes into consideration an individual's level of understanding of and involvement with, existing education related problem in society. This dimension is represented by items 4,8,16, 23. The dimension focuses mainly on the teacher-student orientation towards student community services as important variables within the academic stream and towards the reservation policies of the IITs for the minority groups and backward classes.

Teacher Behaviour Dimension: The items considered to be characteristic of teacher behaviour dimension were 19, 21, 22, 26, 27, 28, 29. Variables considered under this dimension were importance of teacher unions, autonomy of teachers, criteria for teacher promotion and the interests teachers display towards student problems.

Administrative Function Dimensions: Finally the items representative of the administrative climate of the institute were represented by numbers 24,25,30. This dimension questions the nature of leadership within the Institute and the decision making powers vested within the junior teachers, the senior teachers and the various heads of the department.

The Data and an Analysis

Student Management Dimension: This dimension takes into consideration important codes that should be governing student behaviour within the IITs. It further analyses whether or not general responsibilities, like student representation within the policy making bodies, should be vested within the students or not. One of the first items in this dimension questions' the maturity of the undergraduates' in order to be given' more responsibility for their own education'. It was interesting to note that almost 62% of the teachers and 78% of the undergraduates agreed to the broad general statement of a recognition of the maturity of the undergraduates to be responsible for their own education. This statement needs to be broken down into more realistic clauses. This however may be done by appraising the other items under this dimension.

The data on item (20) revealed a majority student teacher support for student representation within policy making bodies of the IIT. Item (18) researching student independence revealed that both respondent groups did not mind student grades being made known to parents and concerned authorities.

Item (2) considered the question of class attendance to be made compulsory or not. It was interesting to note that 55% of the staff members agreed that classroom attendance was to be made compulsory and approximately 75% of the student respondents disagreed with such an opinion. This could be viewed as a teacher orientation towards the importance of class teachers as opposed to self study on the part of the students.

Another item (3) dealt with the institution intervention into developing the students personal as well as cognitive skills. In response to this however, majority of both categories of respondents felt that the institution should instill programme and seminars/discussion within the course which would enhance an individual's personal awareness and beliefs. It is also hypothesised here that if the students felt that development of personal values might necessitate institute intervention in student daily behaviour pattern, they (the students) might resent it. This needs to be tested further.

Items (7), (8), (9) which dealt with crucial issues like drug problems, political and disruptive behaviour, revealed that teachers and students were alike in their orientations towards student political and disruptive behaviour on campus. The student respondents belong to the premiere institutes of the country where there has been a minimal history of disruptive behaviour and where there has been a great emphasis on academic excellence. However, on the issue of drug addiction around 68% of the teachers and only 39% of the students felt that the regular drug addicts should be either suspended or dismissed. This is one view point of the student which represents a liberal attitudes. An overlapping continuing study in the area of 'drug addiction' within the IIT campuses reinforces a similar viewpoint. The students feel that the experimentation with drugs is often necessary in a students life and if a student resorts to hard core addiction it is his own priority or choice.

On the item (6) which states that 'rules governing student behaviour here are outmoded' almost a comparable members of students and teachers, were in agreement. Approximately, 52% of the teachers and 61% of the students were of the opinion that certain basic rules in existence within the IIT and governing student behaviour needed a look and review.

Academic Management Dimension: The question of making all courses elective within the IIT's implies an allowance for students for greater specialisations in narrow subfields. 36% of the teachers and as high as 51% of the students felt that all courses should be elective, thereby, increasing the number of courses and the flexibility of the system (10). An overwhelming majority of students and teachers agreed that all courses in the IIT's should be made job oriented and that there should be a greater emphasis on self study among the students rather than regular lecturing (15,17). The emphasis on self study implies a less structured academic milieu where a student can hope for an emergence of interest in his subjects. This study style would be characteristic of a research orientation where students could be shaped to ask questions and seek answers on their own, rather than accept routine lecturing. Self study would also enable a student to go deeper into the sub areas of a subject. The strong emphasis on making all courses job related by students and teachers also indicates a shift in focus in present day education towards linking economic industrial and technological realities with the education process. This point is further enhanced by the fact that 62% of the teachers and 60% of the students felt that the present course work did not sharpen an engineer's instincts towards real problems in contemporary life.

On the question of the education focus in the IITs it was felt by 50% of the students that there should be a somewhat greater focus on a broad liberal education. This implies an education system which allows for more unstructured and a wider variety of subjects, (encompassing other engineering related subjects like humanities, management, industrial engineering). On this item an equal number of teachers agreed and disagreed (13).

Two further course-related concepts (11), (14), were considered. The proposition that grades should be abolished was disagreed upon by 75% of the students and 69% of the teachers. In engineering education in India, a history of high achievement has always been prevalent and the emphasis on grades as incentives to study or parameters to differentiate between the poor, good and best has been there. The orientations of both samples of respondents appear similar on this item. The final item, that instructions should be in regional languages', which reflects a conservative tone, was disagreed upon whole-heartedly by both the teachers and the students. In all the five IITs and other advanced centers of learning, 'english' is the medium instruction. Proficiency in this language among the IITs is very high and this well equips the IIT graduate to enter and perform well in the international - job market and centers of learning.

Special Issues Dimension: This dimension tested the stand of the respondents on a few social issues. The two basic premises (4), (23) that the normal academic standards should be relaxed for the intake of the minority group students and teachers, were opposed by the student and teacher respondents. The minority sections in India are the "scheduled classes and the backward classes". These groups are being given a 'headstart' programme exposure elsewhere and in the IITs, but the respondents opposed to the lowering of standards for them within the IITs.

The students were rather ambivalent about the fact (16) that students should have one year's compulsory community service as a part of their degree requisite. The teacher respondents, on the other hand, felt strongly that this bit of 'community service' should be induced in the curriculum as compulsory. This would heighten the students knowledge about community structures and problems. The fact that higher education should be available to all who are qualified and are interested (5), had a high student support but elicited an ambivalent stand from the teachers. This implies a conservative stand on the part of the teachers.
Teacher Behaviour Dimension: It was interesting to note that on this dimension, the teachers and students displayed a range of opinions. Both groups were strongly in favour of, teacher autonomy in class to present any idea teachers considered relevant, and the fact that promotion of faculty should be based on 'how effective the teacher was to stimulate the student and make the subject relevant and interesting (28), (29). Whereas 75% of the teachers felt that faculty unions were necessary and they did not disrupt the academic life, they also felt the need for collective bargaining within the IITs for their unmet needs (26), (27). The students however differed in their opinion on this issue. This could be due to the non existence of student political behaviour on IIT Campuses in India.

Both samples of respondents strongly agreed that teacher evaluation measures should exist within the IITs (19). In fact this measure is in practice in all IITs and the feedback the teacher obtains is usually well accepted. It was interesting to note that while a majority of both groups were convinced that a greater emphasis on conformity, rather than creativity, existed within the IITs (22), 62% of the teachers as opposed to only a 27% of the students disagreed that the teachers in IITs were indifferent to quite a few student problems. This could imply that the teachers focussed heavily on conformity patterns as regards social behaviour and learning skills of students.

Administrative Functions Dimension: This last dimension considers certain aspects of decision making policies within the IITs. A majority of both groups of respondents felt strongly that a fewer numbers of rules and administrators would be better for a congenial and progressive aura within the IIT (25). A majority of the students however felt that the senior professors in the five IITs have disproportionate powers in decision making and the junior members have very little say in course or policy related matters (24), (30). This fact is better understood by the fact that by and large students in IITs feel closer to junior teachers and find the senior ones unapproachable. As opposed to these student responses, the teachers display an ambivalent stand on both the above matters.

Conclusions and Implications

The present study considers a few of the dimensions related to teacher student orientations. An analysis of the data reveals an interesting similarity of orientations of the student and teacher samples of the five IITs, on many important matters.

One of the most significant implications of the study is that the high achievement and academic excellence of the IITs is probably due to a match in the teacher student orientations in the relevant areas of student-teacher behaviour expectations and patterns, course structures, the system inadequacies and the administrative functioning of the IITs.

The critical differences in teacher student opinions were restricted to teacher preferences for compulsory attendance for students, punitive measures for drug addiction on campus, and a greater emphasis on specialised training as opposed to a liberal form of education. To elaborate the last concept the students felt that course work should be characterised by self study, a wide variety of elective courses to choose from and an emphasis on creativity rather than structured conforming course patterns.

Another significant point which surfaced during data analyses was the student response that the teachers were indifferent to student problems. This has serious implications as the IITs, having a high pressure and competitive academic milieu generate a number of problems like anxiety reactions, escapist (drug) behaviour, academic under-achievement, and suicidal attempts. The teachers need to be oriented to understand, the concoomitant problems that go hand in hand with brilliance and excellent academic performance.

The IIT's being the most advanced centres of learning in India and having their alumni being absorbed in all international centers have a standard to be maintained. This can be done by greater probes into critical orientations of teachers and students which eventually play a significant role in determining the climate and consequent performance standard in many campuses.

The numbers in parentheses indicate the item nos. in the questionnaire (Appendix A).

References

Clark, Burton: The Distinctive College, Aldine publishing Company, Chicago, 1970.

Feldman, Kenneth A., and Theodore M. Newcomb: The Impact of College on Students, Vol. I, Jossey-Bass Publishers, Inc., San Francisco, 1969.

Trow, Martin: Teachers and Students. Aspects of American Higher Education. McGraw Hill Book Company, New York, 1975.

Wallace, Walter: Student Culture, Aldine Publishing Company, Chicago, 1966.

Appendix A

Questionnaire with Teacher-Student Responses Incorporated

Please indicate your agreement or disagreement with each of the following statements:

SA. Strongly Agree A. Agree with reservation
D Disagree with reservation SD Strongly Disagree

			SA	A	D	SD
1	Most undergraduates are mature enough to be given more responsibility for their own education	T	10	52	25	13
		S	26	56	20	4
2	Attendance in class should be compulsory	T	21	35	24	20
		S	5	20	50	25
3	This institution should be concerned about student's personal values as it is with their intellectual development	T	27	53	10	10
		S	40	31	14	15
4	More minority group (e.g.SC/ST) students should be admitted here even if it means relaxing normal academic standards of admission	T	3	17	30	50
		S	16	15	24	45
5	Opportunities for higher education should be available to all who have passed school and want it	T	29	25	24	22
		S	55	32	10	3
6	Rules governing student behaviour here are outmoded	T	15	37	38	10
		S	26	35	25	14
7	Students known to use marijuana and other drugs regularly should be suspended or dismissed	T	43	26	28	3
		S	12	27	45	16
8	Political activities by students have no place on a college campus	T	59	24	11	6
		S	40	30	17	13
9	Students who disrupt the functioning of a college should be expelled or suspended	T	52	34	11	3
		S	35	35	16	14
10	All courses should be made elective/optional	T	11	25	26	38
		S	10	41	39	10
11	Grades should be abolished	T	14	17	28	41
		S	15	10	37	38
12	The course work as it is now is irrelevant to contemporary life and problems	T	10	28	46	16
		S	30	30	36	4
13	There should be less emphasis on specialised training and more on broad liberal education	T	11	38	38	13
		S	26	32	28	14

			SA	A	D	SD
14	All instructions should be in the regional language	T	5	11	33	51
		S	2	8	10	80
15	All courses should be made job oriented	T	28	38	26	8
		S	22	38	27	13
16	Students should be made to spend one year in community service	T	21	53	19	7
		S	18	22	28	32
17	There should be greater emphasis on self-study rather than regular lecturing	T	19	55	22	4
		S	28	38	19	15
18	A student's grade should not be revealed to anyone, including his/her parents	T	1	8	38	53
		S	27	4	24	43
19	Teachers should be formally evaluated by their students	T	30	54	11	5
		S	72	19	6	3
20	There should be student representation on the governing board of the institution	T	16	50	20	14
		S	46	25	17	12
21	Most faculty here are indifferent to student problems	T	7	31	47	15
		S	27	46	18	9
22	There is greater emphasis on conformity than creativity	T	16	50	30	4
		S	44	32	8	16
23	The normal academic requirements should be relaxed in appointing members of minority groups (SC/ST) to faculty here	T	2	10	33	55
		S	9	18	19	54
24	A small group of senior professors has disproportionate powers in decision-making in this Institute	T	26	32	32	10
		S	22	48	17	13
25	This institution would be better off with fewer administrators	T	26	47	20	7
		S	28	42	22	8
26	Faculty unions disrupt the academic life	T	5	20	38	37
		S	16	45	30	9
27	Collective bargaining by faculty members has no place in a college or university	T	10	26	43	21
		S	28	28	30	14
28	Faculty members should be free to present in class any idea that they consider relevant	T	43	46	9	2
		S	52	24	15	9
29	Teaching effectiveness, not publication, should be primary criterion for promotion of faculty	T	35	35	24	6
		S	54	30	5	6
30	Junior faculty members have no say in running their departments	T	14	28	39	19
		S	12	48	32	8

T - Teacher responses in percentages
S - Student responses in percentages

SPATIAL POSITION IN THE COLLEGE CLASSROOM, PROFESSOR-PEER RELATIONS, MOTIVATION AND TASK PERFORMANCE

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1. Introduction

In past studies, Haber (1976), (1980), (1982a), (1982b) and reported by Amdur, in Psychology Today, (January 1984) hypothesized and found support for the idea that a college classroom group is not a single unified entity but is composed of at least two groups. These two groups are the dominant one composed of White Anglo Saxon Protestants (WASPS) and marginals, namely, minority groups such as foreigners, Blacks, Jews and Catholics. It was found that the minority groups mainly occupied the spatial periphery of the classroom (the front, back and sides of the group),[1] while the dominant WASPS were found to occupy the spatial center of the group positions inside the occupied peripheries. Further, it was found that when classroom territory was invaded, centrals defended their territory more often and more aggressively than did invaded peripherals. The process of the division of the territory between the centrals and peripherals was thought to be accomplished by the minority group arriving early and claiming the peripheral seats. Spatial behavior was seen, therefore, as symbolic non-verbal behavior expressing intergroup relations. The theoretical basis for these studies was based on Simmel's description, Wolff (1950), of social outsiders as spatial outsiders. The author has tried to substantiate Simmel's theory through the measurement of spatial relations and status in educational and training groups.

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[1] However, front, back and side sitters were grouped together and were perceived as one entity composed of a concentric circle around the centrals.

In the study here reported the author attempted to further refine and test hypotheses about spatial relations as non-verbal behavior in the educational or training group and its symbolic meaning. Spatial position was here broken down into more refined (4) parts than formerly, such as front, back, side and center of the group. Hypotheses regarding the proposed differential behavior of each of these four groups in relation to the professor to peers, motivation, and to the task were tested. The group here being examined was an adult group, composed of students attending five off campus and evening courses in Montgomery College, Maryland.

2. Hypotheses

The hypotheses are based on spatial position of the student in the group and its relationship to authority, peers, motivation and task.

i. Front row - identifies with authority (professor) rather than peers

ii. Back row - identifies with peers not with authority

iii. Sides (last on the right or left of any row) - identify with neither peers nor authority

iv. Centrals (all others "inside" peripherals) identify with both peers and authority

v. It is hypothisized that there will be a correlation spatial position and motivation

vi. Task performance is considered unrelated to spatial position. If it varies it is considered due more to conformity or rebellion toward authority and/or peers than to actual intelligence. Performance therefore is perceived as socially determined.

In keeping with spatial position and attitude to peers and authority then, as stated in points i - vi it is hypothesized that the front row and centrals will relate and "perform" better with the professor and tasks than those in back or side seats. Performance is measured in terms of (a) interaction and (b) conformity.

3. Methods

i. The Sample

The sample was composed of five evening or Saturday classes of Montgomery College, Maryland, totalling one hundred and thirty-five students. The classes were all in Montgomery County, Maryland. The five classes were in Accounting, Anatomy, Business Management, English, and Sociology. These were largely adult, older off campus students.

ii. Measurement Tool

The earlier studies by the author relied on participant observation of spatial position of the sample by trained student observers, together with a questionnaire. Recorded spatial position and questionnaire variables were correlated. The present study attempted to use a self-reporting technique regarding spatial position and measures on peer, authority relationships, motivation and task performance. This is a departure from previously known measures of classroom performance such as that by Sommers (1969)or Haber which relied on participant or non-participant observers. The method used in this study was attempted as a means of saving the time and expense of training observers. Students were given a questionnaire which included a class "map" asking them to locate their position on the "map" and to answer a number of questions. The self-selection of spatial position on the "map" was correlated with other variables.

iii. Variables

The spatial position of students as to whether they occupy front, back, side, or central positions in the classroom was correlated with peer-authority relations, motivation for the class, and task performance.

iv. Analysis

Differences between the four spatial groups were compared using a Chi square measure of the strength, significant at the .05 level or below.

4. Findings

i. Spatial Position and Relationship to Professor and Peers

This part of the findings deal with (a) how often the student spoke to the professor and (b) how conformist the student felt toward the professor,and peers. Given the hypothesis earlier that front sitters and centrals would be most empathetic to the professor, it would be expected that the spatially front and central students spoke more often to, and were more conformist with the professor than those on the back and sides of the group.

a) Times spoken to the Professor

Table 3
Times Spoken to Professor

	Never		1-6 Times		7+ Times		Total
	#	%	#	%	#	%	
Center	1	3	14	41	19	56	34
Front	0	0	17	59	12	41	29
Back	3	14	12	54	7	32	22
Sides	0	0	18	72	7	28	25
	4	4	61	55	45	41	110

$X^2_{3df} = 12.86, p<.01$

Centrals and front sitters respond more to the professor as hypothesized.

(b) Conformity

The following question was intended to relate Merton's (1968) paradigm of adaptation, i.e., A. conformist, B. the ritualist, C. the retreatist and D. innovative, to this study. Merton's Paradigm regarding agreement with means and goals and the individual's acceptance of each reads as follows:

Modes of Adaptation	Culture Goals	Institutionalized Means	
A. Conformity	+	+	(i.e., centrals)
B. Ritualism	-	+	(i.e., back)
C. Retreatism	-	-	(side)
D. Innovation	+	-	(front)

Therefore respondents were given the following alternatives: i. I do what the teacher wants and like it that way, ii. I do what the teacher assigns that's the best way to get along, iii. I do what I have to but why beat your brains out, and iv. I go along with the goals of this course but would like to change the methods. Our hypothesis was that the spatially central would be represented by conformity, accepting both the goals and means of the professor, those spatially at the back would represent the ritualist's mode of adaptation, going along with the means but not the goal. Those on the side were hypothesized as retreatist (reject means and ends), and those in the front, innovative. Table 2 represents the findings.

Table 2

	Conform Do What Teacher Wants		Ritualist Do What Assigned		Retreatest Why Beat Brains Out		Innovator Change		Total
	#	%	#	%	#	%	#	%	
Center	29	66	12	27	1	2	2	4	44
Front	15	56	7	26	2	7	3	11	27
Sides	11	46	9	38	2	8	2	8	24
Back	7	35	11	55	1	5	1	5	20
Total	62	54	39	34	6	5	8	7	115

While the differences between the four groups are not significant, it is clear that the central and front rows are more conformist, the back row more ritualist. The side sitters are more conformist than was expected and are the most surprising in several respects.

ii. Motivation and Interest

In this section it was intended to find out if there was a relationship between spatial position, motivation and interest in the class. These were measured by (a) reason for class, and (b) interest in the course.

(a) Reason for Class.

Table 3
Reason for Class

	Required		For Training		Class Seemed Interesting		Total
	#	%	#	%	#	%	
Back	8	73	2	18	1	9	11
Center	15	65	8	35	0	0	23
Front	10	56	5	28	3	17	18
Sides	6	50	2	17	4	33	12
	39	61	17	27	8	12	64

$X^2_{3df} = 11.4,\ p<.01$

From this table it can be seen that the back row is in the class largely because it is required or part of training. Their sitting with friends might be construed as symbolizing the fact they "grin and bear it" better among friends. Centrals are there for much the same reasons. However, as shown below, they are also interested in the course. Professors often remark on the lack of attention or non-conformity of those in the back row. This might be more understandable if they are there only as a requirement and are not very interested in the course. Surprisingly again, the side sitters of the group are more often than the others there out of interest.

(b) Interest in the Course

The next table shows that the back sitters find the course "not very interesting."

Table 4
Interest in Course

	Course Very Interesting		Course Not Very Interesting		Total
	#	%	#	%	
Center	33	69	15	31	48
Front	17	61	11	39	28
Sides	11	44	14	56	25
Back	8	36	14	64	22
	69	56	53	44	123

$X^2 = 8.7, p<.05$
3df

iii. Task Performance

a) Participation

Students were asked to rate their participation in the class. Table 5 illustrates responses.

Table 5
Participation in the Class

	Less Than Others		Equal or More Than Others		Total
	#	%	#	%	
Back	15	63	9	37	24
Side	8	36	14	64	22
Front	9	31	20	69	29
Center	12	26	34	74	46
	44	36	77	64	121

$X^2 = 9.4, p<.05$
3df

As hypothesized front and centrals claim equal or more class participation, back the least. Side sitters participate more than expected.

b) Average Grade in College

It was hypothesized that the front seaters and centrals (as conformists to authority) would have the highest grades, back and side sitters as non-conformists would have lower grades. Non-conformity to authority or peers rather than inability to achieve is thought by the author to account for lower grades among back and sides of the group. These people may have other characteristics such as certain types of leadership.

The table below shows that the hypothesis that central and front sitters perform better (regarding grades) than back and side sitters is supported.

Table 6
Average Grade in College

	A-B		C		Total
	#	%	#	%	
Front & Center	66	87	10	13	76
Back	16	77	5	24	21
Sides	13	68	6	32	19
	95	81	21	18	116

$x^2 = 6.3, p<.05$

In earlier studies by the author a strong relationship was found between minority group status and peripheral seating (at that time, front, side and back sitters were grouped together) in the college classroom. Peripherals were found to be significantly more often members of minority groups, being either Black, Catholic, Jewish, foreigners, or the children or grandchildren of foreigners. It was found that peripheral(or central seating)was influenced by foreign forebears as far back as grandparents having been born outside the United States. The spatially central were most often not only WASPS but third generation WASPs.

At that time the author studied all peripherals, front, back and sides as if they were one group, without differentiating the characteristics of those in the front compared to those in the back or sides. In the present study, however, peripherals themselves were divided up into their three components, front, back and sides, and examined as separate units as shown above. It was assumed that as found in earlier studies, the majority of those on the periphery were to be minorities. However, in view of the fact that the front and back students were so different on measures regarding peer-authority interaction and conformity, reason for the course, interest and performance (regarding grade) there was obviously some other fact besides simple minority status of influence.

It was therefore decided to test not only the fact that peripherals in general were more often minority group members than were centrals, but which particular part, if any, of the periphery, was most occupied by minority group members and if this was in any way connected with the differences between front and back students. A closer study of the religious, ethnic and racial makeup of those on the front seats compared to those at the back, and sides, showed a 94% occupancy of the back row by minority group members. The percentage of minority group students decreased as one proceeded from the back to the front, regarding the peripherals, and was least found among the centrals. See Table 7 below.

Table 7

Spatial Position and Minority Group Status

	WASP		MINOITY GROUP		Total
	#	%	#	%	#
Back	1	6	15	94	16
Side	8	36	14	64	22
Front	9	43	12	57	91
Central	20	53	18	47	38
	38		59		97

$X^2 = 8.6, \ p < .05$

One question asked of respondents was whether they had ever been arrested. Although there were too few responses to this question to draw conclusions, it is interesting that of the six who answered affirmatively only one came from the back row, i.e. 50% of those arrested came from the front. None came from the centrals, only two came from the sides. Earlier it was shown that of the few students classified as innovators (those who went along with the goals of the class but wanted to change the methods) the largest percent came from the front. When arrest and innovation are both found more often on the front than any other area, even though in small numbers, it suggests the possibility of the front row being not only cooperative but more, wanting, so to speak, to "pick up the ball and run with it." They are possibly not only authority oriented, supporting the professor, but possibly have leadership potential. This does not eliminate the possibility of leadership potential in other areas of the room, but it may be a different kind of leadership. These ideas are in the process of being tested, as well as data on spatial position and prisoners in a (prison) college classroom.

5. Implications

Professors have often described those students sitting on the front and at the center of the room as being the "better" students while those at the back are often typified as "not serious."

The findings here reported support the initial hypotheses regarding the closer interaction between the professor and students with those closer to him or her and the reverse of those farthest away. Hypotheses concerning their level of motivation, interest participation and grades depending on spatial position are are also supported, with the exception that side sitters are not as alient to the professor as hypothesized.

The earlier findings of Haber (1982) showed that peripherals were significantly more often minority group members than were centrals. This study shows that it is not only peripherals when treated as an entire group, but that those seated in the back, are overwhelmingly (94%) composed of minority group members. Thus their low level rapportand performance may be for reasons other than ability. a)They may feel "alienated"from the professor who is usually a white male. b) They may feel alienated from the central WASPS's. c)They may feel they are outsiders to both professor and students, and d)professors may be discriminating unconsciously against the supposed "non-serious" student and or against his or her ethnic affiliation e)Minority students may just not understand the viewpoint of professor and students due to a form of cultural deprivation, or unfamiliarity with American ideas.

Thus, the college classroom which appears to be often a single group is in reality composed of several distinct groups showing through non-verbal symbolic (spatial) interaction their attitudes to professor, peers and task. Understanding such non-verbal behavior or being sensitive to it, may improve university eduction.

BIBLIOGRAPHY

Amdur, R. "Jim Crow Revisited," Psychology Today, January 1984.

Blalock, H.M. Social Statistics, McGraw Hill, 1960.

Haber, G. Spatial Relations in the College Classroom, Ph.D. Dissertation, New York University, 1976.

_________ "Territorial Invasion in the College Classroom," Environmental Behavior, March 1980.

__________ "Spatial Relations in the Formal Classroom and in the Gymnasium," unpublished, 1982a.

_________ "Spatial Relations Between Dominants and Marginals," Social Psychology Quarterly, Vol. 45, #4, 1982b.

Merton, R.K. Social Theory and Social Structure, The Free Press, New York, 1968 enlarged edition.

Sommer, R. Personal Space, Prentice Hall, 1969.

Wolff, K. The Sociology of George Simmel, The Free Press, New York, 1950.

FACULTY ORIENTATION IN THE HIGHER TECHNICAL EDUCATION IN INDIA

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INTRODUCTION

Technical Education has seen a phenomenal growth in the past three decades that India now boasts of the third largest technical and scientific manpower in the world. All tertiary education is expensive and especially higher technical education. The quantitative expansion in higher technical education has necessitated a large financial investment in this sector of education. Questions are now being raised about the returns for this investment. This essentially requires the evaluation of the 'quality' of instruction that has gone into the training of engineers and technologists.

The teachers are the heart of any educational system, as they play a crucial role in moulding the hearts and minds of the students. The quality of the products of the educational system, namely, the trained students, depends to a large extent on the quality of the teachers. It is not only the academic competence of the teachers that is important but his attitudinal disposition and convictions on certain educational issues, which, to a large extent, influence the educational system.

Along with the rapid expansion in terms of number of new institutions started, introduction of new courses and disciplines of study, increased intake of students, marked changes have been taking place in various aspects of the educational system (Indiresan, 1983). Changes have been introduced in the curricular patterns like semester and credit systems and in the examination system like the internal and continuous evaluation.

The objectives of these changes are to make the educational system more relevant and meaningful to meet the changing demands of the society. The basic question is what should be the objective of education itself, especially technical education? Should the objective be to merely transmit information and knowledge which are likely to get obsolete in this era of rapid changes in technology; or should the objectives be to train students how to learn? The objective of education would, of course, condition the type of teaching and learning method to be adopted.

Research literature available on the academic profession has indicated a broad diversity of faculty opinions on philosophical, political and university organisational matters. Baldridge's (1971) study indicated faculty differed in their pluralistic to monolithic goals for a university. Faculty attitudes towards the nature of academic freedom, appropriate forms of organisational controls and faculty militancy were examined in a study by Nixon (1973).

Kelly and Hart (1971) found that faculty from different disciplines like natural sciences, humanities and social sciences, held differing attitudes regarding their respective role performances. Stark and Morstain (1978) argue that there is growing evidence that subcultures of faculty can be distinguished, at least in terms of groups that share similar sets of sociopolitical and educational attitudes. Studies of Moore (1970) has indicated that there is a generally recognizable dichotomy in the faculty education attitude, which could be termed as 'conservative', 'teacher-centered' or 'teacher-oriented' as against 'liberal', 'student-oriented' or 'person- oriented' approach.

Gamson (1966) observed that in terms of teaching-learning processes, two systems of orientation can be clearly identified. One set of attitude viewed as important the development of the student as a person and a scholar and this attitude was mainly exhibited by faculty in the social sciences. The other set of attitudes focused on the aquisition of subject matter deemed important by the teacher both from a content and procedural standpoint and generally such an attitude was held by faculty in natural sciences. Stark and Morstain (1978) in their study educational orientations of faculty in liberal arts college, showed that the faculty are not homogeneous in their views of educational purpose and process and were generally related to their disciplinary affiliation with the humanities and social sciences faculty having an educational orientation towards 'puruit of ideas' and the natural science and professional/applied science faculty having an orientation towards 'preparation for life and work'. Holland (1973) and Light (1974) have rationalised that these differences in disciplinary orientations are the product of the predisposition to enter certain field of study and the socialization process that reinforce that predisposition.

Though identifiable trends in the attitudes based on disciplinary differences have been reported, educational orientation is a continuum and there could be wide differences in the orientation of faculty within a given discipline. Also, the profile of orientation within a homogeneous group would also be interesting to investigate.

In this context, it would be of great value to understand the attitude and disposition of teachers in higher technical education rgarding the purpose and process of learning. Are there marked differences among this homogeneous faculty in their educational orientations? What is the profile of their orientations? Are there any distinguishable characteristics which are associated with these orientations? Do teachers with different orientations express different degrees of satisfaction and involvement in their profession? This paper attempts to answer some of these questions, based on a study of teachers from higher technical education in India.

INSTRUMENTS

The Faculty Orientation Survey (FOS) developed by Morstain & Smart (1978) was used in this study. The FOS consists of fifty-six attitudinal items in the Likert-type format, representing six scales with eight items in each scale. These six scales broadly represent two major educational orientations, identified as 'preparatory orientation' and 'exploratory orientation'. The three scales, Achievement, Assignment Learning and Assessment representing the preparatory orientation are interpreted to indicate a high degree of emphasis on acquiring useful knowledge, skills, vocations and social roles. The other three scales, Inquiry, Independent Study and Interaction, representing the exploratory orientation, lay emphasis on the opportunities for exploring one's interests, ideas and personal identify. Brief descriptions of these scales are presented below:

Achievement: (Ach) - A high score in this scale indicates a practical, vocational-oriented outlook and an emphasis on college experience in terms of its future usefulness.

Assignment Learning: (AL) - People with a preference for structured teaching- learning arrangements that emphasise formal courses and clear-cut assignments score high in this scale.

Assessment: (As) - A high score in this scale indicates the emphasis placed on formal evaluation of students' abilities by teachers who value grades as indicators of students performance.

Inquiry: (Inq) - High scores in this scale view that learning is valuable for its own sake irrespective of vocational concerns. Learning to learn is stressed.

Independent Study: (IS) - High scores in this scale show a preference for informal, less structured, individually-tailored courses, where the student can set his own goals and standards.

Interaction: (Int) - High scores show a desire to share the planning of courses, programmes and academic requirements with their students.

A pilot study indicated that no changes were required in the wording of the FOS and were easily understood by the Indian faculty.

The Job Satisfaction Inventory developed by Indiresan (1974) was used to get a measure of the expressed job satisfaction of the teachers. This inventory consists of 30 items in the Likert-type format, covering various job factors like salary, promotion, recognition, liking for the job, etc. The reliability was established by the split-half method and the convergent and discriminant validity established by applying the Campbell & Fiske (1954) model of multitrait-multimethod matrix (Indiresan 1973).

Job Involvement was measured using the Lodahl & Kejners (1965) six item version of Job Involvement Inventory.

SAMPLE

164 faculty, drawn from six different higher technial institutions spread all over India, took part in this study. These institutions included the IITs (Indian Institutes of Technology), Regional Engineering Colleges and deemed universities. These institutions have excellent facilities, have very good faculty and admit very high calibre students, representing the elite engineering institutions available in the country and as such the results are to be interpreted within this selective sample. The age of the teachers range from 24 to 59 with a median age of 36. They had one to 25 years of teaching experience with a median of 11 years. Most of them had doctortes or at least a Master's degree in one of the areas of engineering or technology. The teachers also represented the three major academic levels, namely, Lecturers, Assistant Professors and Professors.

DISCUSSION

The 164 faculty were divided into various subgroups according to their age, years of teaching experience and level of academic position held. There was no significant difference between these subgroups in their degree of orientation. Hence, the means and standard deviation based on combined responses of all the faculty are presented in Table I.

A study of Table I shows that faculty do have different degress of orientation for the six dimensions measured here. The most dominant orientation seems to be assignment learning with a mean of 26.21. This technical education faculty seems to exhibit a definite preference for highly structured teaching learning arrangements that lay emphasis on formal courses and clearcut assignments. At the same time they do seem to value inquiry (mean 24.03) which stresses the value of learning for its own sake irrespective of vocational concerns. Achievement which taps the practical, vocational oriented outlook ranks next (mean, 23.51) in importance. Closely following achievement is the assessment orientation (mean 23.43), which relates to the importance given to formal evaluation and grades as indicators of student performance.

It is understandable that independent study (mean 21.39) which exhibits a preference for informal and less structured courses gets a lower priority as assignment learning seems to be the dominant orientation. The interaction orientation has the lowest mean of 17.16. This indicates that this faculty considers it less desirable that faculty and students share the responsibility for planning courses, programme and academic requirements.

It is also noticed that the mean of the preparatory scales (i.e. Assignment learning, achievement and assessment), which is equal to 24.38 is higher than the mean of 20.86 for the exploratory scales (Independent study, inquiry and interaction). Though the difference in the means is not statistically significant, it is noticed that the group is more homogeneous in the preparatory orientation (S.D. 3.12) than in the exploratory orientation (S.D. 4.17). This finding is in conformity with earlier findings that faculty of physical sciences and technical education have a clear preference for preparatory orientation compared to exploratory orientation.

Table 2 shows the intercorrelation between these six orientations and their relationships to expressed job satisfaction and job involvement.

It is interesting to note that the correlations among the preparatory scales and exploratory scales are positive and significant except the correlation (.115) between inquiry and interaction. There is a significant positive correlation between assignment learning orientation and inquiry indicating that these two need not be exclusive of each other. The high mean scores for these two orientations corroborate this finding. It is interesting to note that assignment learning and interaction are negatively significantly correlated (-.25). This indicates that those who favour structured teaching learning arrangements do not desire to share the responsibility for course planning with the students. Similarly, there is a significant negative correlation (-.319) between assessment and interation. Assessment orientation measuring the power relations of the faculty over the students performance evaluation understandably do not wish to share the course arrangements with the students.

Only assignment learning orientation seems to have a significant correlation with expressed job satisfaction (.225) and job involvement (.241). Perhaps this sector of higher technical education lends itself to a highly structured presentation in a neat and orderly sequence with formal courses and regular class assignments. The faculty exhibiting a higher degree of assignment learning orientation is possibly due to the process of self-selection as pointed out by Holland (1973) and Light (1974). The reinforcement of this orientation by the socialization process could perhaps contribute to the sense of expressed job satisfaction and job involvement. None of the other orientations show a significant correlation with job satisfaction and job involvement.

CONCLUSION

This study has shown that faculty in higher technical education do have different orientations towards the purposes and processes of education; preferences for different modes of learning; varied emphasis on assessment and interaction with students. The findings of this study are in conformity with other studies, that the technical faculty seem to be higher in their preparatory orientation than in the exploratory orientation. Highly structured formal course arrangement seems to provide satisfaction and involvement in the job. Though the value of education for its career orientation and future usefulness is highly regarded, education for its own sake irrespective of vocational concerns is also favoured. The teachers seem to be highly authoritarian where assessment and grades are concerned and also in sharing the responsibility for determining the nature and format of academic programmes. Informal and individually tailored course arrangements are tolerated only to a very limited extent.

As pointed out in the beginning, it needs to be examined whether this high preparatory orientation of the technical faculty is desirable in meeting the larger objectives of technical education, which should not be merely imparting knowledge and skill, but sensitise the engineers and technologists to apply their skill and knowledge to solve social problems. Would it be possible for the faculty to have a 'student centered' approach along with this high degree of preparatory orientation? Will a more favourable disposition in the interaction orientation contribute to better student-faculty rapport? Does the high assessment orientation of the faculty have any undesirable consequences on the interest in learning on the part of the students? What is the congruence in the faculty and student orientation? If a process of self-selection and reinforcement of the orientation by socialization is operating, is it possible to resocialise to achieve the desired orientation?

An investigation into such questions will be very valuable in understanding the dynamics of the total teaching-learning situation to meet the objectives of education.

REFERENCES

1. Baldridge, J.V. (1971) Power and Conflict in the University, New York, Wiley.

2. Campbell, D.T. and Fiske, D.W. (1954) Convergent and discriminant validation by the multitrait-multimethod matrix, Psychological Bulletin, 56, 81-105.

3. Gamson, Z.F. (1966) Utilitarian and Normative Orientations Toward Education, Sociology of Education, 39, 46-73

4. Holland, J. (1973) Making Vocational Choices - A theory of careers, Englewood Cliffs, N.J. Printice-Hall.

5. Indiresan, J. (1973) Convergent and discriminant validity of the Job Satisfaction Inventory - A cross-cultural report. Journal of the Indian of Applied Psychology, Vol.10, No.1, 17-21.

6. Indiresan, J. (1974) Job Satisfaction Inventory - 21 AS in Handbook Psychological and Social Instruments (Ed) Udai Pareek and T. Venkateswara Rao, Samasti, Baroda.

7. Indiresan, J. (1983) Changing Patterns in the evaluation of student performance in India, Higher Education in Europe, UNESCO, CEPES, Vol.8, No.2, 58-64.

8. Kelly, R., and Hart, B.D. (1971) - Role preferences of faculty in different age groups and academic disciplines - Sociology of Education, 44, 351-357.

9. Light, D. (1974) - The Structure of the Academic Profession - Sociology of Education, 47, 2-28.

10. Moore, R. (1970) - Structure of Faculty Attitudes towards the University Teachers Role : A Factor Analytic Study - Educational and Psychological Measurement, 30, 293-99.

11. Morstaini, B. and Smart, J. (1976) - Educational Orientations of Faculty : Assessing a Personality model of the Academic Professions - Psychological Reports, 39, 1199-1211.

12. Nixon, H. (1973) - Factoring a faculty attitude - Change, 5, 10-11.

13. Stark, J.S. and Morstain, B.R. (1978), Educational Orientation of Faculty in Liberal Arts Colleges, Journal of Higher Education, 49, 5, 420-437.

14. Lodahl, T.M. and Kejner (1965) - The definition and measurement of job involvement - Journal of Applied Psychology, 49, 24-53.

TABLE I

Means and Standard Deviations for the six orientation scales

Orientation Scale	Mean	S.D.
Preparatory Scales		
Assignment Learning	26.21	2.63
Achievement	23.51	2.46
Assessment	23.43	2.89
Total Preparatory	24.38	3.12
Exploratory Scales		
Independent Study	21.39	3.05
Inquiry	24.03	2.96
Interaction	17.16	3.18
Total Exploratory	20.86	4.17

N = 164

TABLE II

Intercorrelation between Orientation Scales, Job Satisfaction and Job Involvement.

	AL	Ach	As	IS	Inq	Int	JSI	JI
AL	x	.561*	.501*	.123	.423*	-.25	.225**	.241**
Ach		x	.447*	.147	.379*	-.038	.061	.167
As			x	-.104	.158	-.319*	.106	.123
IS				x	.508*	.414*	.116	.059
Inq					x	.115	.189	.182
Int						x	.160	.001
JSI							x	.194
JI								

NOTE: N = 164

P < .05　　r = .195
P < .01　　r = .254

* Significant at .01 level

** Significant at .05 level

AL - Assignment Learning
Ach - Achievement
As - Assessment
IS - Independent Study
Inq - Inquiry
Int - Interaction
JSI - Job Satisfaction
JI - Job Involvement

THE INTEGRATION OF THE LIBERAL ARTS INTO PROFESSIONAL PROGRAMS: THE USE OF PAIRED COURSES

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Introduction

In recent years many have been critical of the increasing orientation of higher education towards the work-related educational programs at the expense of the liberal arts. There is increasing concern in many sectors of higher education that the liberal arts concept of education is fast being pushed aside by the popularity and expansion of the so-called work-oriented programs professional programs. While there has been a great deal of discussion of the issue and the expressed perceived need to return higher education to its liberal education roots, most of the discussion concludes that the task, while noble, is a tall order. There is little agreement between the liberal arts faculty and the faculty of the professional programs on methods to improve college teaching throught the integration of the liberal arts into professional programs. In fact, many faculty in the professsional programs see the issue as one of 'sour grapes' and self-survival on the part of the liberal arts faculty and not one of educational philosophy. However, few dispute the need to develop a well rounded, thinking, and intellectual college graduate. This is expecially true in the professional programs for their graduates may well be the future leaders of business, the professions, and government. The quest then is to develop methods that will integrate the liberal arts into the professional programs to achieve the goals of the liberal education while at the same time preserving the pragmatic elements of the professional programs.

The goal of the liberal arts concept is to develop thinking and reasoning individuals who have an ethical perspective. In the sense that ethics are rules and standards that govern a particular enterprise or organization it can be said that all college and university professional programs have an ethical component to them. Differences with these ethical stances surface in what might be considered the ethical perspective from a standard amoral professional view and the ethical perspective as it relates to the perceived general moral standards of the society and the perceived differences of this society and the moral or ethical standards of the profession. Many in our present society suggest that these standards do differ and, in fact, some even suggest that professional program ethics is actually a contradiction in terms. The challenge in integrating ethics and the liberal arts concept into professional education should not be in developing a given standard of ethics but rather one of introducing various ethical viewpoints into these programs and allowing the students the opportunity to develop their own view.

The need is to set up organizational structures that promote the presentation of the various views in a manner that allows the professional program student to review, study, and to merge the various perspectives into a philosophy that will serve that student and society once the student leaves us and assumes a position in the business world. Ours is not so much a task to define and present the 'right' philosophy but to promote discussion and to give the student the skills in considering issues from more than one ethical viewpoint.

This paper will focus on a method one liberal arts college has used to make strides in integrating the liberal arts concept into their business and other professional programs and suggests that this improved teaching method can provide any institution's professional program students with a richer education.

Problems in Integrating the Liberal Arts into Professional Programs

Perhaps the most popular method to integrate the liberal arts into the professional curriculum is to require that each student take a component of liberal arts courses. The liberal arts courses give the student an excellent framework to develop their thinking, however, it is quite possible that the student will not integrate the concepts into his or her personal value system. The problem with this approach is not so much the content or the goals but that they occur within a vacuum. The students may have a difficult time applying the concepts to their other courses and ultimately in the professional world.

A liberal education strives to develop a person's ability to think, to understand a wide range of knowledge and to meld diverse learning experiences into a broader perspective of the world and of the peoples in the world. The curriculum, while designed to provide a variety of educational experiences, may not be successful in integrating the concepts of one discipline into courses of another discipline. This can be especially true when that student elects to pursue a program in one of the professions. The business department, as an example, is not always considered to be a 'real' discipline in many institutions but rather 'that vocational department we have to tolerate to help keep the doors open'. In many instances the business department has its own building and its faculty may seldom develop contacts outside their department other than through forced service on committees or during special institutional projects. Even in the smallest of colleges one often finds a certain distance between the business faculty and the liberal arts faculty. If this atmosphere exists it is not hard to imagine a certain lack of integration between the ideas of the business department and those of other disciplines.

While the liberal education concept fosters a more diverse experience for the student there still may be a great deal of difficulty in teaching students to incorporate this education into their business classes. The challenge is one of developing a framework for integration of ideas between classes and more importantly between the faculty who teach these classes. One approach to solving this integration is the use of paired teaching on an ongoing and formalized basis.

The Concept of Paired Teaching

Team teaching generally involves two or more instructors teaching the same course. It has become a rather accepted form of teaching. We often team a senior professor with graduate students or junior faculty. These matchings give the student a more diverse experience through the introduction of several views or it gives a richer experience by allowing the senior faculty freedom from the mundane matters of testing and paper correction so that they can concentrate on the sharing of their knowledge. Team teaching is an effective way to utilize scarce faculty resources and to bring a multi-view to courses.

Paired team (or paired) teaching is a variation of the team teaching approach. Paired teaching also brings together two faculty members but in this approach the faculty coordinate two seperate courses into a joint learning experience for the student. The faculty members look at the course content of the two courses, identify similar areas of interest, and then integrate these interests into the different classes. This approach is somewhat difficult to coordinate due to the efforts needed to structure the two courses so that the faculty are introducing simular concepts during the same approximate timeframe. Although this may present a challenge in coordination it also provides each faculty member with more autonomy in classroom presentation and teaching style than the traditional team approach. This freedom allows the faculty member in one discipline to gear the course to the philosopy of that major while giving the student a two-discipline approach. In most cases the first course would be a major or elective course offering in the student's concentration and the second (paired) course would be a cognate or an elective offering outside the major.

The paired approach has several major advantages over the one-course teamed approach. First, of course, it appeals to the bureaucrats because it does not present any problems in the allocation of headcounts to departments or in distributing faculty effort. It does not present any scheduling problems other than to schedule the classes at different times and for the professors to arrange their schedules so that they are able to attend both classes. More importantly it brings together faculty from two disciplines in an easily arranged and mutually beneficial arena.

The approach also has some very pragmatic features for liberal arts colleges and smaller institutions---especially private institutions. It is becoming increasingly difficult to maintain a diverse liberal arts faculty and department structure as students elect to pursue courses and degrees that directly lead to employment opportunities. Many smaller institutions are caught in a real fix. They are not only experiencing declining enrollments but they are also seeing a shift in the majors of the remaining students to these so-called 'vocational' programs. More and more the institution's viability and survival depends on these programs---especially business programs. The institutions must support and promote these programs to remain open but the necessary shift in resources dilutes the ability to provide a diverse liberal education. This, in turn, begins to change the role of the institution from that of a liberal arts college to that of a business or professional college. This developing shift in role and mission can then lead to some real campus friction as the liberal arts faculty see their departed peers being replaced by professional program faculty. By encouraging the professional program faculty to adopt the paired team approach you can help direct students into classes of other discipline areas while still maintaining the autonomy of the individual units. This is a major improvement over a multi-discipline team teaching approach in an individual class.

The major benefit to faculty and students, however, is the integration of the liberal arts concept into professional programs. The pairing provides the student with a common learning experience from a broader prospective. It also encourages an interchange with students in another discipline---for each class will contain a mixture of students from each discipline. It allows the professional program students to test, question, and perhaps modify their views with students who might have a different perspective of the business world and of the world in toto.

Implementation of the Paired Approach

Many educational philosophers agree that the socialization aspects of the learning process are as important to the growth of college students as the facts they may acquire or the skills they may learn. In addition, it has also been suggested that all learning is in preparation for the future. Thus, the more we encourage our students to be exposed to a diverse socialization process and to learn from the many perspectives, the more we prepare them to make future decisions. The paired team approach can add yet another layer to the student's foundation and help to develop a sense of totality rather than just a vacuum approach. It is an approach that more nearly approaches the integrating aspect that we desire. However, in order for true integration to take place we must approach the merging in a logical and planned manner. The success depends on a good pairing and a good interchange between the faculty members during the course preparation period and during the actual class sessions. The long term integration depends as much on a successful process as it does on a successful product. The key to the integration is as much the socialization of the faculty as it is of the socialization of students.

The first and most important step involves the pairing. You cannot do a pairing on a random or arbitrary basis. There needs to be a mesh between the two faculty members. They must be able to work together and have or develop a common respect for each other. It is important that they have a desire to experiment, to question, to respect the opinions of others, and to be willing to expose their ideas to the up front review of others. They must have self confidence and have the ability to accept constructive comments. In addition, it doesn't hurt if they have some common outside interest, however, this is not necessary. In selecting one's first pair it is often advisable to seek out someone with whom you have worked on a committtee, a person whose conversation and company you have enjoyed at faculty social occasions, or someone whose work you have admired.

Once the pair person has been selected the next step is to try and find some logical pair courses. Surprisingly, this is perhaps the easiest of the tasks. It can often be done over lunch and may require little more than a review of the course catalog. Very quickly one finds that Sociology courses pair well with marketing research courses and that Psychology and Philosophy courses pair well with marketing management, consumer behavior, and marketing theory courses. Ethics courses pair very well with most professional courses.

Once the possible pairings are chosen the respective faculty should exchange their standard texts and course outlines. This gives each a better understanding of the direction and methods of the paired faculty and the courses under consideration. Once these reviews have been made then the faculty needs to decide on the course pairings. An important key to success in the process is that the pairing is done with a degree of mutual understanding, a relaxed atmosphere, and a feeling that this is an exciting and mutually rewarding undertaking. Informality helps to foster these outcomes. It is also quite beneficial for each of the people involved to sit in on a class or two of the pair partner. This helps to build a sense of understanding, friendship, and helps to promote bonding.

The remaining time should be spent developing and modifying the course outlines, coordinating presentations of allied subject matters, and to developing the interpersonal relationship between the pairs. It is sometimes possible to develop an outside student project that will help meet the requirements of both courses. In some cases a group project may be especially helpful if the groups are structured to contain a mix of students from each area. This may give the students practice in group dynamics and dealing with people who do not share the student's appreciation for the business decision process. In addition, since students will need to develop skills in dealing with diverse public interest groups this can help them adapt to accepting other points of view, i.e., to approach the same problem from different perspectives. Also, since many of the people in the other disciplines may pursue a career in government or non-profit agencies, it gives them a case study in decision making that involves the business mindset. It is important to remember that since the paired courses may be existing courses it is highly unlikely that the courses will have an extensive amount of parallel content so there needs to be a large degree of coordination to tie the two courses together to provide the thought-provoking experience for the students.

Journal articles from each faculty's area of interest that pertain to the pairing can be exchanged, critiqued, and reviewed for inclusion in the course or just to inform the other of current developments in the field. Again, the concept is one of process and the sharing of views and ideas. The goal is for each of the pairs to consider ideas and moral values that are somewhat outside their standard area of thinking and to integrate them into the courses.

The final steps in the process have to do with promoting the concept to students and to the actual deliverance of the courses. Both faculty need to do some marketing of the concept to their students. Again, it is important that *both* classes have a mix of students. The ultimate integration comes from the interchange of the ideas from the students of the other discipline as much as it does from the faculty members. It is also quite helpful to have the faculty members sit in on the other's class sessions. They do so to observe but not necessarily to participate. This also helps to foster understanding and to facilitate the interchange and integration of ideas.

Some consideration should be given to making sure that the paired courses do not turn into debates of differing views; to developing an effective student evaluation process; and to a casual but thoughtful evaluation of the pairing by each of the faculty members. Since it is quite possible that a mutual respect may develop from this working relationship it may well be advantageous for the faculty to consider other areas in which they might work together. These areas might include grants, journal articles, or research projects. All of these endeavors can be enriched through the multi-discipline approach and certainly help to integrate diverse approaches to the projects themselves as well as providing that socialization process so necessary to thinking. Since the most positive and productive outcomes of any new process generally develop during the first year and then tend to level off and drop during subsequent years it is generally best to not pair with the same person more than three years. This will also tend to develop a snowball or multiplier effect as faculty are constantly being paired with different people. It is also desirable to encourage meetings between groups of pairs so that they can exchange experiences, problems, successes, failures, and enjoyments. The constantly growing interchange of personalities, ideas, concepts, tools, techniques, philosophies, and understandings will tend to institutionalize the integration on an informal yet effective basis.

Conclusion

Paired teaching has the ability to integrate the liberal arts concept into professional programs by providing a formal process to encourage the interchange of ideas and to provide a socialization to both students and faculty. These approaches not only encourage a formal melding they also provide faculty members with an on-going personal relationship and interchange with someone of possible differing views. It provides them with a non-judgemental and non-threatening arena of exchange. It is almost impossible to imagine that some ethical integration will not result. The long range outcome, of course, is the eventual integration of the liberal arts concept into the professional world through the education process. Education is as much an indoctrination process as it is a process of passing on facts and knowledge. If the indoctrinators have an ethical perspective and incorporate that perspective into each class experience then there is a much greater chance that the students will accept this perspective as a value system and not just as an approach to be learned in a vacuum and then discarded after the paper has been handed in, the final examination completed, and the grade reported.

THE STRUCTURAL PLACEMENT OF TEACHING IN AMERICAN INSTITUTIONS OF HIGHER EDUCATION

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Our intent in this paper is to look at a number of crucial decision points in the evaluation and allocation of resources to individuals and programs by American graduate deans and social science deans (who are usually either institution-wide deans in smaller institutions or arts and letters deans in larger institutions). Our strategy is to compare the points of view of the two types of deans to sift out the commonalities in the structural positioning of teaching in American educational institutions. By focusing on decisions of significant impact, we believe it is possible to cut through some of the idealistic rhetoric through which deans mystify and mythologize their support or non-support of the teaching craft.

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Methodology

A survey of social science deans was planned and executed in 1977 by members of Task Force C, the Institutional Context Task Force of the American Sociological Association's Projects on Teaching Undergraduate Sociology. The stratified sampling frame for the social science deans survey consisted of 75 community colleges, 60 four-year colleges, and 60 universities, all randomly selected from national lists of such institutions. Mailed questionnaires were used for data collection, but the work schedule of the Task Force precluded a follow-up letter. The response rates were 64 percent, 92 percent and 90 percent for the three strata, and 81 percent for the total sample of social science deans.

A parallel survey of deans of graduate education was carried out by the authors in the final months of 1982. All institutions holding membership in the Council of Graduate Schools in the United States were included in the sample, plus those institutions listed in *Peterson's Guide to Graduate Education* (1982) as having 200 or more FTE graduate students. The stratified sampling frame consisted of 376 CGS members and 257 non-members. The response rate to a mailed questionnaire with one follow-up letter was 68 percent for CGS members and 33 percent from non-members, for an overall rate of 53 percent. Statistical analysis for this paper was carried out using Tau b, a correlational measure for ordinal data. Tau b is particularly appropriate for correlational studies in the area of teaching because so many of the variables that are relevant to the success of the teaching enterprise are ordinal in nature.

Findings and Interpretations

The data from the social science and graduate deans surveys are extremely complex. We have chosen five topics for discussion as the most central of the many teaching-related clusters of variables in the two surveys. These are (1) program evaluation, (2) tenure and promotion, (3) merit raises, (4) funds for teaching-related activities, and (5) the dean's resource allocation policy.

Teaching was easily the most important factor used by social science deans in 1977 to assess programs under their supervision, with a median ranking of 1.1. The program's reputation within the institution was second with a median ranking of 2.4. Other factors were reputation outside the institution (2.8), student enrollment (3.0), publication rate (3.9) and research grants (4.6). The question was asked differently in the 1982 survey of graduate deans. Instead of being asked to rank factors, the deans were requested to rate the importance of 14 factors in assessing graduate program quality. Once again, teaching was an easy winner. Publications took second place, followed by research grants and national reputation, the placement of graduates, and the quality and number of applicants.

There was no competition for teaching as the primary criterion for tenure in the minds of social science deans. Research was a distant second, and committee assignments, professional organization activities and community service were clustered at the bottom of the scale. However, specific teaching activities such as team teaching, multi-disciplinary and disciplinary curriculum development, and participating in teacher development were only one-half to one-eighth as likely as publishing or journal editing to be given consideration in promotion and tenure decisions. Support of teaching as an abstract notion and support of specific teaching activities were two very different things in the minds of these deans.

Overall, graduate deans also rated teaching as the most important factor in tenure decisions. Teaching occupied first place once again. Research and publication were almost indistinguishable in second place. University service received only modest consideration, and there was extremely little tenure benefit from community service and professional organization involvement. The most interesting point in these data is that teaching is not the most important factor in tenure decisions at 41 percent of American graduate institutions. No data can be reported on specific teaching activities because this question was not included in the graduate deans questionnaire.

Merit salaries were reported for faculty teaching performance by 71 percent of the social science deans, as compared with the 46 percent who reported merit salary for faculty research performance. Specific teaching activities were almost as likely as publishing activity to be considered for the award of merit salary.

At the universities participating in the 1982 survey, teaching and research were reported as almost equally likely to be rewarded with merit salary awards. Seventy-two percent of American graduate institutions routinely award merit increments for teaching and 70 percent do so for research. Almost one-fifth of the institutions award no merit pay for either category of faculty performance. In may cases this is because they have a strict salary schedule based on seniority within rank, as in the case in the Pennsylvania and California systems.

Social science deans indicated that funds were available for a number of activities in support of teaching. These included travel to professional meetings (94 percent of all institutions) and teacher development workshops (73 percent). Sabbaticals or other paid leaves were granted in 75 percent of the institutions.

The graduate deans questionnaire included a number of activities that had not been part of the social science deans survey. Instead of asking whether funds were available for these activities, we changed the format to request information on the level of funding, ranging from poor to excellent. Combining the good and excellent categories, we found that teaching activities fared well when compared with research activities. The activity receiving good or excellent support in the highest proportion of graduate institutions was "offering graduate courses often enough." The only other activities that were supported at this level in at least half the institutions were sabbaticals for both improving knowledge (a teaching item) and doing research, and the purchase of library books and journals. Teaching assistantships were more likely than research assistantships to have good or excellent financial support.

Does this picture seem too positive? Perhaps that is because the deans do not always communicate the availability of resources in support of teaching to faculty members. Faculty members in a second 1977 survey carried out by the Institutional Context Task Force were asked the same questions about resource availability as the deans. On every item, faculty were less likely than deans to report the availability of funds to support professional activity. Many faculty must ask deans directly to find out that funds are available for teaching support.

The emphasis on maintaining outstanding programs is almost identical among graduate deans and social science deans when adjustments are made for differences in wording of the questions on the two surveys. Fifty-three percent of the graduate deans and 56 percent of the social science deans have the maintenance of outstanding programs as their top priority in resource allocation. Almost all the remaining graduate deans and most of the remaining social science deans favor upgrading good programs to outstanding status. Fair and inferior programs are largely ignored, and languish in academia's bargain basement (although they are no bargain for students). The best way for departments to compete for funds in institutions where this climate prevails is to argue that they are already good and need only the steady input of resources in the next five years to become outstanding.

When bivariate correlations and multiple regressions are used to analyze variations in the operational importance of teaching by institutional characteristics, we find that deans in community colleges, four year colleges, and universities offering only master's degrees at the graduate level place a greater emphasis on teaching than deans in doctoral universities. However, universities control many more resources, and so are able to support teaching more fully than small, less well-funded institutions.

The generalization that institutional policies are reasonably consistent, that is to say that they "make sense", has its limitations. For example, graduate institutions in which deans emphasize teaching in their assessment of programs under their supervision are no more likely than other institutions to make merit salary awards for teaching (Tau b = -.03, not significant), and institutions that do award merit salary increments for teaching are no more likely than other institutions to fund sabbaticals for faculty who wish to use their time away from campus to improve their knowledge of the subjects they teach (Tau b = -.02, not significant). Similar policy inconsistencies are found throughout the data of both the 1977 and 1982 studies.

Further Commentary

In a sense, the inconsistencies in the data reported above are more important than the consistencies, for they reflect what we take to be the actual condition of teaching in American higher education. Three important reasons for inconsistencies in the support of teaching by deans are (1) inadequate funding in teaching-oriented institutions, (2) imperfect institutionalization of teaching support at every level of institutional structures, and (3) the lack of a campus cultural tradition defining teaching as an activity that must be nurtured in many diverse ways if it is to flourish.

Finances are said to be tight everywhere in higher education today. This is a fundamentally misleading statement. Private institutions with sizable endowments and elite showcase institutions in state college and university systems are funded to provide education in depth. Many private church-related and secular liberal arts institutions have little or no endowment and use all of the available income each year just to stay in business. For most public colleges and universities, the problem is that state legislatures provide them with just enough money to support basic operations from year to year, with essentially no discretionary money that might be used to increase the level and quality of teaching support services.

There are three major groups of American colleges and universities that have teaching as their unambiguous raison d'etre: community colleges, private liberal arts colleges (both secular and religious), and those public colleges and universities that are not accorded elite status and funding by state legislatures. These are precisely the institutions that are most likely to be either in financial trouble or systematically underfunded over an extended period of time. Taking this into account, it is not surprising that research institutions often are able to commit more funds to the support of quality in teaching than their inadequately funded, teaching-oriented sister institutions. Therefore, correlations between teaching orientation and teaching support are much lower than would otherwise be expected and the magnitude of these correlations should not necessarily be interpreted to mean that deans are giving lip service to teaching without intending to support it with whatever (often severely limited) discretionary funds they have available.

Inconsistencies in financial and policy support for different teaching-related activities within institutions reflect the imperfect institutionalization of teaching support in American institutions of higher education. Each category of teaching support in an institution is subject to its own set of structural constraints, the sum total of which tend to produce inconsistent levels of teaching support across institutions. Consider the case of merit salary awards to faculty who demonstrate excellence in teaching. In a given institution, there may be a collective bargaining agreement that limits or forbids merit salary awards for any reason. Funds for merit awards may be chronically short, or may vary from ample to nonexistent from year to year. Even where funds are sufficient and there is no limitation stemming from union agreements, faculty input into the merit process may be structured so as to minimize the consideration of teaching performance, or it may be disregarded by tradition where it is structurally encouraged, or faculty politics may undermine it in any case. There is also the methodological problem that the measurement of the dependent variable in studies of teaching has not been standardized. Everyone "knows" what constitutes good teaching, but there is little agreement among teachers and administrators on the precise dimensions of teaching and the conventions by which these may be operationalized and measured. Since teaching quality is not measured in any consistent sense, we can surmise that the relationships among teaching support, teaching performance and teaching outcomes have not been empirically established to the satisfaction of most administrators. As university administration becomes more extensiviely rationalized and businesslike, solving measurement problems such as these will become increasingly necessary in order to justify the expenditure of discretionary funds for teaching support.

The results of the two surveys of deans lead one to believe that few campuses have a strong tradition in which teaching is defined as an activity that must be nurtured in many different ways if it is to realize its potential. Deans in the higher status institutions tend to be oriented toward external prestige systems which reward them for channeling funds to their best departments, star scholars, and research teams that have a chance of making spectacular scientific discoveries. In nearly all institutions, deans have too much to do, partly due to small staffs and partly due to a heavy load of meetings and conferences revolving around administrative decision-making and the articulation of administrative thrusts with faculty governance structures. The day-to-day support of teaching is easily put aside in the rush of less important emergencies.

Faculty can also contribute to the lack of a strong tradition of teaching support to the extent that they undervalue teaching in their own careers and concentrate their professional resources on the production of a "salable" vita. It is more likely to be faculty than administrators who sit on the promotion and tenure committees in which teaching is sometimes passed over with a few words while research and publications are discussed in minute detail. Our impression is that faculty are much more likely to push for increases in salary and fringe benefits than for increments in teacher development funds, both informally and through collective bargaining procedures. It is tempting to observe that one contributing factor to this situation is that there is nothing in the professional training (particularly in graduate school) of most social science professors that leads them to believe they should have extensive support for their teaching activities.

ACADEMIC LEADERSHIP AT THE UNIVERSITY OF JORDAN

Abdel Salam Majali
University of Jordan

1- Introduction

Researchers and scholars have given different definitions to the concept of leadership. Some tend to define leadership through the personal qualities of the leader, others through the qualities of the situation or group, while a third view tends to stress the interaction of the leader with the situation.

But inspite of this apparent variation in the understanding of leadership or in defining it, it is generally agreed upon among scholars and researchers that leadership is a synonym of introducing change, either in the goals of the group, or in the techniques and methods of arriving at these goals. Change in this context is in a positive sense, that is change for the better.

One of the main tasks of academic leadership is to utilize human, financial, and physical resources for the consistent pursuit of agreed upon worthy objectives of the institution. Academic leadership must ensure that decisions within the institution will constitute progressive steps in the direction of realizing these objectives. It is also responsible for interrelating and integrating the succession of decisions upon which the functioning of the institution is based.

In academic institutions, however, the responsibility of introducing change and hence decision-making is more widely diffused than in a business enterprise. The day-to-day operation of a university requires continuous decisions on a variety of matters like courses to be taught, research to be performed, acquisition of books for the library, money allocation, academic and administrative personnel matters, maintenance of physical plant, operation of university dormitories and dining halls, etc. Such decisions require a wide range of academic leaders in whom effective responsibility for decision-making rests.

The present paper gives a brief account of the main characteristics of academic leadership at The University of Jordan, as a modern medium sized institution of higher learning in a developing country. It should be mentioned, at this point, that the University of Jordan was established in 1962, as the first university in Jordan, with one college (College of Arts) including 167 students, 8 faculty members, and 14 administrative staff. In the 1983/84 academic year, the university has about 11,500 students enrolled in 12 colleges with over 600 full-time faculty members and 1200 administrative personnel (including clerical staff).

In the University of Jordan, special characteristics of academic leadership are based on direct well-designed and programmed communication among relevant sectors of the university population. Some forms of this communication are discussed in section 2 of this paper. In section 3, we present some examples of introducing change as special features of academic leadership. Finally, some concluding remarks are given in section 4.

2- Some Forms of Direct Communication

In dealing with all individuals who constitute the university community (faculty, staff and student , the first and foremost characteristic of academic leadership at the University of Jordan is to create a climate of freedom and participation: freedom of thought and expression and active participation in university life. This is demonstrated by the following forms of interaction among various human sectors of the university.

2.1- Meetings of the President with Academic and Administrative Officers.

The President holds regular hourly weekly meetings with each Vice-President, Dean, and Chief Administrative Officer. These meetings are not individualized, in the sense that they are usually attended by two to four officers. In these meetings, issues and problems relevant to the academic or administrative unit concerned are discussed in a face-to-face open manner. Very often, these meetings result in specific concensus and directives for action with minimum red-tape routine. Besides, these meetings help maintain a continuous flow of information through personal communication among academic leaders.

2.2- Meetings of the President, Academic, and Administrative Officers with Faculty Members and Staff.

The President also holds regular meetings with faculty members and staff of administrative divisions, who are divided into reasonably sized groups, such that each group includes faculty members from all colleges and staff from all divisions. A schedule is set up so that the President, Vice-Presidents, Deans, and Chief Administrative Officers meet with these groups successively throughout the academic year. In these meetings, the university academic and administrative leadership provides and receives information about current and suggested future plans of action. These meetings serve as a forum for exchange of opinions on all university matters. The only restriction imposed in these meetings is that issues to be discussed should not be of a personal nature, but rather of a general university-interest nature.

2.3- Meetings of the President, Academic, and Administrative Officers with Students' Representatives.

A third type of meetings is scheduled between representatives of the student body and the university academic and administrative leadership. Such communication is an established practice, in which students' representatives express their views on a wide variety of university issues like curriculum, examinations, student representation, and co-curricular activities. It is observed that these meetings are very useful, because they strengthen ties between the student body and the university leadership on one hand, and deepen the sense of belonging among the students on the other hand.

2.4- Meetings of Each Facutly Member with an Assigned Group of Students.

To ensure better and more effective interaction between students and faculty members, the university developed a special system of student advising. Each faculty member is assigned a group of 20 to 30 students majoring in his department as his advisees until graduation. Each group meets for one regularly scheduled hour per week. This approach creates a positive atmosphere of trust and understanding between the faculty member and his group of advisees; and hence provides an excellent opportunity for interaction and guidance. The meetings are not restricted to academic matters. In fact, general cultural topics are encouraged. Basically, it is left for each group to choose topics and issues to be discussed in these meetings. However, the university presents a list of topics, and it is left to each group to make its own choice. This list includes academic topics like graduation requirements, registration, library use, examinations, term papers, graduate studies, by-laws governing student societies, disciplinary regulations, etc. It also includes topics related to co-curricular activities, community services and job opportunities. A third category of topics included in the list is of general cultural nature.

2.5- Meetings of Academic and Administrative Officers with Relevant Sectors of the Community.

It is the responsibility of a modern university to provide leadership and services to the local community. In this respect, the University of Jordan has established channels of communication with various community sectors. Each College Council includes one or two members of the community who participate actively in all college matters. A special "Consultation and Technical Services Centre" takes initiatives in approaching local business and industrial firms with specific relevant plans and projects of studies aimed at solving their problems and/or improving productivity. In addition to this, colleges are encouraged to invite representatives of relevant community sectors (business, industrial, social, etc.) for a meeting attended by all faculty members concerned. Such meetings proved highly successful in demonstrating what the university is doing and indeed capable of doing in the way of community leadership and service. In the area of research, the university approaches, on a regular basis, public and private institutions with the purpose of identifying the type of problems they face, and those which require research activities. Even when a problem is identified only in a broad and general sense, the university provides the expertise of one or more faculty members for collaborating with the staff of the institution concerned to prepare a detailed research proposal aimed at solving the problem. This approach is effective in directing the attention of various local public and private establishments to the importance and usefulness of research activities performed in the university.

3- Some Special Characteristics

3.1- The University of Jordan leadership considers teaching at the university level a profession with special skills, abilities, and aptitudes. In appointing graduate teaching assistants, the university selects those who show academic excellence, good character, and interest in teaching. Besides, the College of Education at the University designed a special diploma program of 33 credit hours in teacher training. Graduate teaching assistants who enrol in this program must show special competence and deligence before they are granted Ph.D. scholarships. The university also believes that this program or a parallel one will be very useful for newly appointed fresh Ph.D. graduates and even to other faculty members who need training in the use of modern and advanced technological teaching media and tools.

3.2- Good textbooks written in Arabic for various university and college requirements are rare if not non-existent. Although the university library holds several reference books in Arabic and English, the need still exists for such textbooks in Arabic, especially in Colleges where Arabic is the medium of instruction. Hence, the university developed a plan by which teams of expert specialized faculty members are contracted to write good quality textbooks. Once the book is completed and approved, the university assumes responsibility of its publication and distribution. In some cases, more than one book is written by different teams, and it is left to the individual faculty member to choose the book that suits his purpose better. This approach is fairly new, and hence it has not yet been properly evaluated.

3.3- The University of Jordan believes in the continuing revision of its regulations, by-laws, and laws, so as to keep up with advancements in higher education. Normally, faculty members, through their departments, colleges, and representatives in the various university councils, do take an active part in revising these regulations and laws. It is clearly observed that the majority of faculty members are quite settled in their work with a resulting low rate of turn-over. This reflects positively on the teaching process, which is a major facet of the academic make-up of the university.

3.4- In addition to continuous review of regulations and laws that govern and organize the academic process, it is also believed that a parallel development of philosophy and curriculum is extremely desirable. In its first decade, the university followed the yearly system of course offering, which was applied in neighbouring Arab universities. It was found later that this system involves considerable wastage in effort and time, especially for a university which is highly selective in faculty appointment and student admission. Hence, the university switched to the credit-hour semester system, which allowed admission of more students with better interaction among students from different colleges. Needless to say, the switch required re-design of courses, changes in methods of teaching, and development of methods of evaluation.

Successive curriculum development and course revisions became necessary later on as answers to crucial issues and urgent needs of students and local community. In fact, each department is required to up-date its academic plan every five years, which allows for incorporating recent advances in each field of specialization.

3.5 According to university regulations, only academic departments are authorized to confer academic degrees. But, the need may arise for professional degrees requiring programs of study that do not fit a specific department. For this purpose, the university established various centres that offer research opportunities, render community services, and confer degrees for specialized programs. Some of these centres helped so much in the improvement of student learning, especially, the Language Centre, the Centre of Technology and Teaching Aids, and the Centre for Development and Training of Medical Personnel.

3.6- The university believes in providing its students with a solid cultural basis. For this purpose, each college offers a number of "university requirement" courses which are designed as general cultural studies related to the field of study at the college. Besides, the university sponsers each year a number of student trips out of the country, as an integral part of a rich cultural program of co-corricular activities. The university encourages excellence in general cultural knowledge by holding special competitions for this purpose with good prizes as an incentive. This approach has indeed encouraged active participation of students in the regular sessions which each faculty member holds with his group of advisees.

3.7- The university stresses the importance of special and summer studies. To this effect, the university has established recently the "Office of the Dean Summer and Special Studies". The new Dean is entrusted with the program of those admitted as special students as well as the program of the summer term. His duties include recuruitment of students and faculty members, especially from outside Jordan, for the summer school. This program is fairly new, but it is expected to attract a good number of students and faculty members from neighbouring countries with very hot summer climates. This program will provide excellent opportunities for interaction between the regular students and "visiting" students and professors, with definite positive academic and cultural results.

4- Some Concluding Remarks

The University of Jordan encourages participation of all faculty members in academic leadership. Each faculty member is invited to share the rights and responsibilities of running business at the university. The academic department, as an independent entity, is entrusted with the responsibility of recruitment, decisions on academic program, and making recommendations with respect to tenure, promotion, and other personnel matters. Each faculty member is also encouraged to put forth his point of view on current issues either verbally, in one of the means of direct communications described in this paper, or in a written statement processed through proper university channels. Leadership through freedom of expression, participation, and direct communication proved to be very effective and constructive at the University of Jordan. Besides, the university adhers strongly to leadership by example, in the sense that the leader is the first person to apply the principles he is preaching. It is a leadership believing strongly in dealing with people as you wish them to deal with you.

THE DECENTRALISED DEPARTMENT

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Note: Ulster Polytechnic will merge with another institution to become the University of Ulster on 1 October 1984. Readers are begged to attribute any inconsistencies in terminology in this paper, or in those of my colleagues John McAleer and Peter Whitehouse which follow, to our present interim state, neither defunct as a polytechnic nor born as a university.

INTRODUCTION

My intention in this paper is to describe recent actions taken in the School (hereafter called Department) of Educational Studies in the interests of a more decentralised way of working. In addition, I shall venture some more general observations on decentralisation at university departmental level carried out in pursuance of the aim (to which many universities profess commitment) of meeting community needs. The focus of the paper is professional development (PD). While the specific task of the Department is the education of school teachers embarked on their careers the developments described below are believed to have application beyond the teaching profession and to presage a new relationship between the university and the professions in general.

Of the two papers by my colleagues, which accompany this, one focuses on an experiment in teaching style and delivery which reduces the need for professionals in remote areas who enrol in university courses to commute to distant campuses. The other describes a theory of experiential learning which we have found helpful in structuring our work with serving teachers. The significance of both papers within the general theme of decentralisation lies in the promise they offer that the focus and emphasis of the professional's studies can be shifted to his work-place and to his encounters with his clients, thereby minimising the time needed for formal contact with the university.

PARTNERSHIP

The Department of Educational Studies exists to help meet the PD needs of 19000 teachers in Northern Ireland schools and colleges. These teachers work for a range of employers, mainly the Department of Education of Northern Ireland, Education and Library Boards, and certain Governing Bodies of schools. The Department of Educational Studies is one among several institutions and organisations, from universities through teachers' centres to the inspectorate and advisory service, who are "providers" of teacher development.

Professional development of teachers necessitates a relationship between teachers, employers and providers. Such a relationship must take account of the special character of each but in particular their independence of each other and hence their autonomy. Accepting this, the proper relationship is partnership, freely entered into, in pursuit of common goals.

The Department asserts that the long-term challenge of professional development is to establish effective support for professionals in the field. A partnership of teachers, employers, and providers is the necessary condition in the special case of teacher development. We have insisted that the foundation of a working partnership between those concerned with the professional development of teachers needed to be constructed before questions of current priorities, or resources, or roles and functions were taken up. The outcome to date is a Department which stands in marked contrast to the general run of Departments in the university, because its locus of operation is outside the university, in partnership with the other agencies engaged in the common task of enhancing the competence of professional teachers.

PROFESSIONAL DEVELOPMENT: THE PROCESS

PD, as argued above, issues properly from a partnership of three parties, viz the professional, his employer, and the university department or similar institution which undertakes his continued development. Their task is to sustain the professional while encouraging him to reflect critically on his own practice, hypothesise improvements, test them in action, evaluate and hypothesise further. This paper will not elaborate the employer's role, except to point out that provision of the resources needed for development is largely up to him. From the stand point of the Department, PD is a process, sometimes involving the acquisition of a skill (if researching is a skill), always concerned with the generation of knowledge. But the knowledge referred to is knowledge generated by the professionals at their work-place, not dispensed by faculty members at the university. There is almost a role reversal here. It is not the professional qua student who alone must struggle to derive meaning from his observations: the faculty member faces the same challenge. They enter partnership (that is, a relationship of equals) as they negotiate a common meaning to be attached to the observed events of the professional's everyday practice. Private descriptions through this process are elevated to the status of public knowledge and legitimise hypothesis - forming and related experimentation. But the observing, hypothesising, and experimenting continue to appertain to and be focused on the professional in his work-place. This is the developmental process which we engage in through action research. If there is a senior partner in it all, it must be the professional himself.

THE DEPARTMENT'S ROLE IN PD DELIVERY

The distinctive contribution which the university department can make to PD is through structured programmes of study located within the academic framework of the institution. In the case of the Department of Educational Studies it took us some years to see this clearly. It is easy, given a commitment to PD, to get bogged down in debate with professionals, their employers and other providers about problems of development, to sit on advisory committees, etc. However, most of the obstacles to effective PD lie beyond the competence of the Department to redress. Impediments such as inadequate or inappropriate salary structures, bad working conditions, outdated or restrictive work practices, are real bars to teachers' PD; but the remedies lie in the world outside the university, that is with the other partners. Our contribution had to be framed within the canons of good scholarship in the university, that is, through award-bearing courses and programmes of study.

Our thinking went like this: Planning, coordination and resourcing of PD are important in their own right and the proper concern of all the partners in the enterprise. But plans must be turned into actions on the ground, the behaviour of professionals must change, otherwise there is no development. Development is something which people can learn to do. The developmental process is therefore in large measure a learning process and as such amenable to the processes of academic planning and control which the Department normally operates under the university.

It became clear to us that our distinctive role, having conceptualised PD as a learning activity amenable (at least in principle) to the normal processes of university academic management, was to deliver PD as far as possible within the normal academic structures of the University. We felt that PD done properly deserved to carry credit towards recognised awards and argued that award-giving institutions such as universities should open up to PD their processes of academic planning and control. That is, such institutions should be prepared to give the imprimatur of their formal awards to PD designed in accordance with the principles enunciated earlier. This would guarantee commitment at institutional level through the tying in of the university's public standing and academic credibility with its PD programme. It would be the distinctive and unique contribution of the providing institution as co-partner with professionals and their employers.

Several other benefits would accrue. Course design was the forte of such institutions, and their award-bearing programmes were required to meet rigorous design standards. The continuity, interrelatedness, and mutual relevance of all courses within a given award-bearing programme would be guaranteed, while course and programme evaluation leading to redesign as necessary would be ensured through the normal monitoring operations of the institution. In this way a major weakness of the traditional university approach to PD could be eliminated. Professionals would benefit from the public recognition accorded by awards, not least those who at present might spend a life-time attending courses without gaining any such recognition. Non-graduates in particular would benefit through being able to progress towards a degree. PD provision nation-wide could be rationalised more easily, gaps filled, duplication avoided. Mutual recognition of each other's credits by providing universities would be the final step in the rationalisation of provision as met through the medium of courses and programmes.

Reverting to the Department of Educational Studies,we accordingly framed our main operations to fit within a standard university degree format, the BEd in our case, which Dr Whitehouse deals with in his paper. However, the challenge of decentralisation was thrown up once more by this very action, because while we wanted to involve all those with responsibility for PD in its delivery, problems will arise when the chosen delivery mode is the university degree course. Universities generally expect such courses to be planned and delivered by faculty and their bureaucratic procedures reflect this expectation. How we have dealt with this problem is explained below.

DECENTRALISATION OF PD PLANNING AND DELIVERY

The Department participates through providing a structure within which it can ensure PD through a wide variety of learning activities mediated as courses of study which may be taken in ordered sequence for recognised university awards. These courses emerge through a wide variety of planning processes, involving several, few or one designer. We hold it essential that teachers and their employers (in which we include all those others who are professionally involved in teachers' development) should be able to participate with us in the Department at all stages in the planning, delivery, and evaluation of PD courses.

We also found it important to clarify the nature and extent of the participation. It was not enough, in our opinion, that teachers taking our courses should merely be allowed expression of their views. There had to be a guarantee, at the design stage, that teachers' views would be instrumental in shaping course aims, content, and pedagogy, and that assessment criteria would be acceptable to them. This approach to participation made course design an integral part of teacher learning and professional development. It put teachers at the heart of the debate about the relevance of programmes. It was predicated on the Department's belief that teachers had a right to make the judgement of what was relevant and not to have it made for them, while expecting them to recognise that employers and providers had corresponding rights.

Accepting that PD courses should emerge through a negotiating process participated in by all the partners, what have we done to make participation a reality in our BEd programme? I shall advert in particular to three key features, viz aims, pedagogy, and the nature of the study or course units which comprise the programme. (A unit comprises 30 hours of formal contact plus about 45 hours of collateral workplace-based activity).

The Aims as set out in the official documents of the BEd are:

> "To offer every applicant a realistic opportunity of progressing towards an Honours degree or pass degree through studies designed to make him better as a teacher and member of a school community. To establish in the teacher a process of professional renewal which will continue throughout his working life."

Each unit is required to reflect these general Aims irrespective of its specific aim or subject matter.

The Pedagogy of the course is set forth thus:

> "The key aspect of any unit is the assignment where a student is expected to research his professional practice as a result of studies in the unit. While the content of a unit may reflect any sort of teaching, classroom or organisational concern or problem, the manifestation of this concern in the classroom (or organisation) is of paramount importance: and it is the research into it at the student's varying level of investigative expertise that is the expected outcome of any unit provided. Thus, while the content and teaching methods in any unit may vary, the learning method will not vary. Students enrolled on a unit will

> be expected to apply action research methodology in the assignment. While every tutor teaching a unit will be cognisant with action research - understanding gained in the process of designing the unit - they will not be expected to teach the methodology. They will, however, be expected to judge assignments in terms of action research criteria."

My colleagues' papers develop the themes of action research methodology at work "on the ground" so I shall not elaborate further on this distinctive and indeed unique methodology except to assert its relevance to PD education beyond the special case of teacher development where our work lies.

The quoations below from the course documents are intended to give something of the flavour of decentralisation at work in the Department, the Faculty of Education, and the University. An insight into the real meaning of partnership in PD, from the standpoint of the university department, hopefully emerges. Partnership, and decentralisation which follows from it, are new territory under exploration by my colleagues and myself. These papers are in the nature of a small-scale map setting out main landmarks. We intend to continue with the exploration.

> "The chairman of the In-Service BEd course committee's Liaison and Design Sub-Committee will be in regular contact with the five Area Education Boards, wardens of the 17 Teachers' Centres in Northern Ireland, and others, to ascertain problems that schools and teachers are facing.
>
> Arising from these (continual) discussions he will make contact with those people who are currently engaged in research into the appropriate problem. More often than not, such expertise will be found among tutors in the Polytechnic; but members of the Northern Ireland Inspectorate, Area Board officers, Teacher

Centre Wardens, and members of other educational institutions may be asked to participate.

Having identified a person willing to design and teach a unit the LDSC chairman will put him in contact with a member of the Faculty of Education who is knowledgeable on action research methodology and unit design. They will work together in designing the unit.

The Liaison and Design Sub-Committee will meet to assess the appropriateness of the unit to the philosophy of the degree, the degree standard of it, and resource implications for both the Polytechnic and the educational authority where the unit will be taught. All aspects must be judged as satisfactory for the unit to be considered for validation.

Every unit approved by LDSC passes to a committee of the Faculty Board, the Quality Control Committee, where its appropriateness for inclusion in the degree programme is assessed. Following scrutiny here the unit passes to a joint Validating Panel of the Faculty of Education Board and Senate. The Panel will also include an external member acceptable to Senate."

DESIGN TEACHING EXPERIENCES: "NEW WAYS TO MAKE LEARNING MORE EFFECTIVE".

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The Universidad Regiomontana, through its Department of Continuing Education, has offered in august 1983, an advanced workshop/seminar to stimulate faculty development and teaching improvement:"New Ways to Make Learning More Effective". Among its 18 participants representing five Departments from the Division of Humanities and Social Sciences, were two Deans, one from Education, and another from Literature (Linguistics). Also was present the Head of Instructional Technologies and Laboratories of the university.

The aim of the workshop was to present its strategy as an alternative to the formal course of training for teachers in higher education*. It was considered desirable to approach the topic of "how teaching may be improved", by exposing teachers to different learning methodologies that they can experience for themselves in realistic classroom situations, This approach (laboratory systems) has in fact been a major tool presented by the author in three previous "IUT", International Conferences: Aachen, Germany 1978; Lausanne, Switzerland 1980; and Tsukuba, Japan 1981.

This project is the work of an interdisciplinary team assembled to consider the "DESIGN OF TEACHING EXPERIENCES" as one strategy to move teaching methods in higher education away from the conventional teacher-centered approaches to more evocative (realistic) or student-based methods towards better teaching and learning. This experiential approach links with many other aspects of life outside the educational institution itself (See apendix, Continuing Education at Universidad Regiomontana) That may become possible in the next ten to twenty years and the possibilty for making them more responsive to the needs of students through the use of new instructional technology.

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*The Department of Pedagogy, within the Universidad Regiomontana has an active faculty development program (induction courses for new teachers).

DEVELOPMENT OF ACADEMIC SKILLS[1]

(ACTIVITIES FOR THE SUPPORT OF TEACHING IN H.E.)

> "The academic personnel of higher education institutions, undertake very diverse functions, which is convenient to divide into four major groups: Research; Teaching; Promotion of Culture; and Academic Administration. Each one of these functions suppose activities whose achievements depend on rather great measure on specific and different preparation, and from the implementation of various instruments and technical resources". (National Plan For Higher Education, SEP-ANUIES "Normative Recomendations", México 1982.)

What is written above has made me think in how teaching may be improved, and in the necessity of a design tool for staff development and training at university level, now that government is holding higher education closely accountable for its productivity.

Microlecture System Design Workshop (MSD).

"MSD", is a method of instructional design, desirable for the training of experienced university teachers, that implies the extension of their academic skills, and increase the quality of teaching and learning outcomes in H.E. Therefore, in this report, some succesful approaches on the use of "laboratory systems" will be shared, and some critical factors considered for its implementation.

In 1981, at Tsukuba University in Japan, the author, on behalf of the Department of Architecture, Univeridad Autonoma de Nuevo León, was invited to coordinate an advanced "MSD" workshop, as is published in the proceedings of The Seventh 'IUT' International Conference, organised by the University of Maryland. The microlecture System Design workshop, emerges from a continuous search for an 'andragogic' (Adult Education) model, which is consistent to the training and development of academic personnel of H.E. institutions, since 1974. In the same year, the instructional development movement in North America, reached a great level of interest, which led to the First International Conference for the Improvement of University Teaching, held in

Amherst Massachusetts[2].

BACKGROUND

The "MEDU" (Faculty and Instructional Development)program at Universidad Regiomontana, began in March 1976, the project continued in several phases, reaching completion at the end of the year. In 1977 the operant nucleus of this project was constituted by the Teaching Training Modulator, an instrument of design elaborated at this university to review the teaching-learning process at the laboratory of pedagogy.

The significat changes in an improved teaching situation, observed at our teaching and learning laboratory, was commented in a paper presented during the Fourth IUT, International Conference in Aachen Germany (1978). In this laboratory ideal conditions are met to offer the participants the environment, material for, and individualized assesment, tending to solve the needs of its educational task. for this purpose feedback is provided through videocassette recordings. Each participant has the opportunity to deliver a 5-minute presentation, which is videorecorded, replayed and analysed in a small group session.

At this stage of the "MSD" workshop development, the 'highlight' was probably the 5th activity in the 1979 paper, where members of a workshop videotaped their interview with each ather. At the University of Surrey, in England (1979) this particular aspect of the "MSD" workshop, called Dr. Lewis Elton's atention. And when it was repeated in 1980 at Lausanne Switzerland during the Seventh IUT, International Conference, the benefits were evident. Everybody in the "Microlecture Training For Experienced University Teachers workshop", found the 'dyadic' experience to be both useful and interesting. The objetive is to check the participants listening skills, and their ability to communicate in a condensed manner the collected data from a collague.

The 1981 "MSD" workshop in Japan, was designed to determine if the needs of university teachers to communicate effectively with their students were met. And if they knew how to help students toward the process of their own education. Participants from Sweden and Japan were encouraged to interact within a microgroup debriefing, till they achieved the aim of the worksop by drawing upon their own experience and by learning from each other. This was a most stimulating encounter, which gave us a further insight of the'role playing' strategies, an the use of the overhead transparencies and other visual aids.

The "MSD" workshop in 1983, at Universidad Regiomontana: "New Ways To Make Learning More Effective", offerer by its Department of Continuing Education, reports on a project to assist faculty in developing, implementing and testing modular instructional segments (Microlectures from 5-15 minutes) tending to strengthen the audiovisual variation of the didactic stimulus. In conclusion, the workshop whas well-structured but flexible enough to promote individual faculty development and provide improved learning opportunities for students. The methodology, now up dated, is commented below. The main message in my opinion, was the importance of maintaining student interest and participation; sensitizing their attention and awakening their intelectual interest to commit themselves individually or through teamwork in the learning tasks suggested by the teacher. The participants were reassured to be confident in their lecturing style, and in what they want the students to do.

METHODOLOGY

The participants enroll individually, according to an academic area or department once they have received the invitation, usually through an academic meeting. It is suggested that a pre-registration for this workshops have to be accepted on a first-come, first served basis, as long as space is available, since most workshops have enrollment limitations.

Depending on the objetives, the availability of time, and the number of participants, the training program usually consists of 16 hours, which can be completed in a workshop/seminar of two days of full dedication, or in four half day sessions. The programatic content, stocked with informative material-perhaps too much? (see apendix) which has been employed in the events offered by the Department of Continuing Education of the Universidad Regiomontana, consisted in a revision of the interrogants of planned education at university level. Furthermore, the variation of didactic stimulus is analysed, and the fostering of the five human skills suggested by Gagné, in relation to a theory of instruction which assures the understanding of the objectives of the course and increases the active participation of students towards the process of their own education.

During the pre-instructional conference, the non-directive feature of our consulting approach gave us consciousness of looking not only to superficial teaching techniques without regard for substance. This methodology consists in individualized assessment and microteam work group on the planning of a lecture (form, quantity and timing) presentation followed by constructive videocassette feedback, i.e. voice factors analysis, relevance of content, audiovisual aids, managing discussions, etc. carried out by participants (team of speakers) and comments from peers (team of observers or synthesizers). In our program the self-directed learning is the most valuable element.

In order to increase the value of the experiential approach, the concluding remarks of each activity or session of the "MSD" workshop is led by the coordinator (tutors) as a summary or cognitive closure. As it was stated earlier in this paper. "The molding of man for lifelong learning", is the result of improved teaching. The team of speakers have at every moment the opportunity and the right to evaluate the soundness of feedback, and accept or reject the need for a change.

CONCLUSSIONS

"A teacher who wishes to know what his chances are in his/her professional task, states T.W. Moore, in his Introduction to The Theory Of Education, must posess a general theory in the indicated sense. He must know clearly what his objetives are, and up to what extent they are justifiable. He must know which methods are most trustworthy to achieve those objetives and what type of students those methods are applicable to. All this will grant him the set of general prescriptions which he needs, and which he will be able to apply in the specific circumstances of his classroom". (Alianza Editorial Madrid 1980).

The research carried out to evaluate the impact of the "MSD" workshop, indicated that the participants acquire awareness of their own capacity and creativity as university teachers, which result in changes in their attitudes and consequent changes in their actions and teaching performance. "Since it was assumed that each participant in the workshop had found a style that worked reasonably well, and an effort was directed at finding ways of making it work better still" (see in apendix:"Comments on the event", by participants).

Notes:

1. Paper read at the XXXII National Reunion of ASINEA: "The Mexican Republic Institutional Association for the Teaching of Architecture". Sponsored by the Facultad de Arquitectura, U.A.N.L.(November 10,11 and 12,of 1983).

2. The author, as representative of Fac. de Arq. U.A.N.L. attended this event organised by UNESCO and the University of Massachusetts.

References:

1. Craig, R. and L. Bittel. "Training and Development Handbook",New York, McGraw-Hill (1967).
2. Allen, D. and K. Ryan. "Microteaching", Massachusetts, Addison-Wesley Publishing Company, Inc.(1969).
3. Miltz J. Robert. "Understanding Microteaching as a Concept",Masachussetts, School of Education, Mimie, (1973).
4. Brown, George. "Some Myths of Staff Training and Development", Impetus, Vol.6 June 1977; pp.2-8 University of East Anglia, Norwich England.
5. Pérez de León, Eduardo. "In-Developing Individual Effectiveness",proceedings Fourth IUT, International Conference, pp.1040-50 Aachen,W Germany 1978.

Apendix N°(1)

COMMENTS ON THE EVENT

Lic. Blanca López de Mariscal
Dean of Linguistic & Literature Department.

Lic. Ana Margarita Guerrero
Profr. School of Education.

Lic. Elsa Ma. Hinojosa K.
Dean of School of Education.

"This 4 session seminar-Workshop has been an enriching and interesting experience to the professors who attended it. The group was formed by lecturers from the Education, Philosophy and Spanish schools and has given us the opportunity to share our teaching experiences, and at the same time think more profoundly about the possibility of improving interaction with the students and achieve through this improvement a greater rendership in the learning process.

The course consisted on the revision of a theoretical frame in which there were included such interesting themes as: "The auditive and visual variation of didactic stimuli","Planned Education", "Feedback and its relation as an aid" and "Microlecturing as an experience of design"; themes which led to an exchange of opinions and constituted the foundation to teaching practices.

The practice workshops were carried out starting from microlectures, planned by the teachers on the courses which they are teaching at the university now, were filmed on videotapes whose review allowed us to find out about our development in the classroom; some aspects were improved, others were reinforced, comments on each one's performance were made; so as to finally reach an awareness focused on how to optimize the teaching and learning processes.

Obviously, seminars of this type constitute a great potential to the teachers of our University for through it, we viewed lively the importance of the teaching stimuli".

Ing. Oscar Garibay Vila,
Head of Laboratories and instructional technologies.

"I have been teaching for nine years as a university teacher which have allowed me to live through many experiences in teaching in addition to interact with fellow teachers and students from whom I have learned a lot. This has reinforced more the daily concern on the importance of having a continuous personal evaluation as a teacher (an activity I carry out term through term with the students of each course). If we should not do this we might fall in a "Maximism as a teacher", which is the case of many who are blinded by the "luminosity" with out being aware that the reality which surrounds them and which yields unripened fruits semester after semester.

It is never too late to correct, reinforce and improve oneself and I found this out now that I had the opportunity to participate in the course "Microlecturing Workshop as a Design System". During which were viewed themes so useful as interesting as:

-Visual variation of didactic stimulus: where there is pointed out the great value which visual stimuli possess in instruction.

-Auditive variation of didactic stimulus; here the great amount of factors which exist in communication and speech are taken in consideration, which, nevertheless we do not use out of negligence or lack of knowledge.

-Feedback and its relation as an aid.
A point already commented.

-An inventory of skills; a theme hard to deal with by oneself as in group form, but nevertheless very important as a tool to really know ourselves and know our limit as true teachers.

-Microlecturing Workshop.- This was first carried out with the aid of some devices such as recorders, with the purpose of familiarizing ourselves to the sound of our voices, giving us an opportunity to acknowledge that on many ocassions it is not as nice as we think.

On a second opportunity, the videorecorder was used to film all our microlectures, which gave us the opportunity to find out we are not as good as we think and that there is a lot within us which we have to improve so as to perform our teaching task more efficiently.

It was in the end and a good and renewing experience, which gave me a clearer view of the original concern to take the course. And to bear in mind that as guides we must have more vision than the ones we guide and now I ask myself; How many "guides" are willing to take this or any other kind of Pedagogical Improvement course...?"

Presentation of Paper at the Conference

In July,in either "panel" or "individualized" format, I will further comment on how we were able to cope with some system-wide institutional policy related to the conditions and concern for staff development at the School of Education within the University. Also I will devote time to ilustrate(e.g.OHP, or perhaps a short video tape) where we are in relation to the broad problem of assessing training program effectivenes. Suggestions for other specific topic, or SD issue, are welcomed.

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. Prof. Rolando González Hernandez, English Advisor, Div. of Communication.
. Ms. Blanca A, López Martínez, Secretary at Cont. Educ. Dept.

Apendix N(2)

CONTINUING EDUCATION AT UNIVERSIDAD REGIOMONTANA

The Department of Continuing Education was officially founded in 1978. Today, the persons in charge are five: The head,his administrative assistant, a full-time secretary, and two part-time assistants, coordinators in the various activities of the Department such as planning, promotion and implementation of events.

The philosopy of the Department derives from the concept itself of CONTINUING EDUCATION. Continuing in that the growth of the human being is always in process, and Education or Development of perfective potentialities in the essence of man.

The Department has its main fundamental objective to promote the permanent progress of the people within our community, inasmuch as to have them reach many of the resources which the University offers to it regular students.

Also encourages of the necessary creativity and initiative to give birth to new sources and types of jobs, it helps persons to become more responsible as citizens.

Through Continuing Education, our University Focuses its activities toward persons who have achieved their University Education stage, or ones who for some reason did not finish it, but wish for human betterment, whether it be in the personal, social, professional, technical, or religious fields, that is to say, the University seeks for the persons promotion beyond the university halls, the conservation, transmission and fosterning of knowledge and cultural values for the betterment of persons, society and institutions.

Its programs are not directed exclusively to enterprises, though these are kept in mind; the various types of programs include courses, seminars, conferences, symposiums, encounters, round tables, live exercises, discussions and conversations (lectures) directed openly to society or to groups with specific activities. There is also included in the functions of the Department the coordination of courses, conferences, lectures, seminars, discussions in small groups and similar events, promoted through the initiative of the academic branches of the University, with the purpose of supporting, complementing and/or upgrade the students knowledge and of professionals recently graduated; as well as the faculty and administrative personell of the University itself.

A TECHNOLOGICAL APPROACH TOWARDS PEDAGOGY

Marcia Prieto, Ph.D.
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The term technology arouses many reactions. Some people think it difficult to come to an agreement concerning its meaning. Most of the time, however it has been associated to machines , neglecting other aspects of it. The term Pedagogy has been profusely defined, but has seldom been analysed as a discipline with a determined object of study. The aims of this paper is to elucidate technology on new bases and to analyse Pedagogy as a technological discipline providing with the related reasons and explanations.

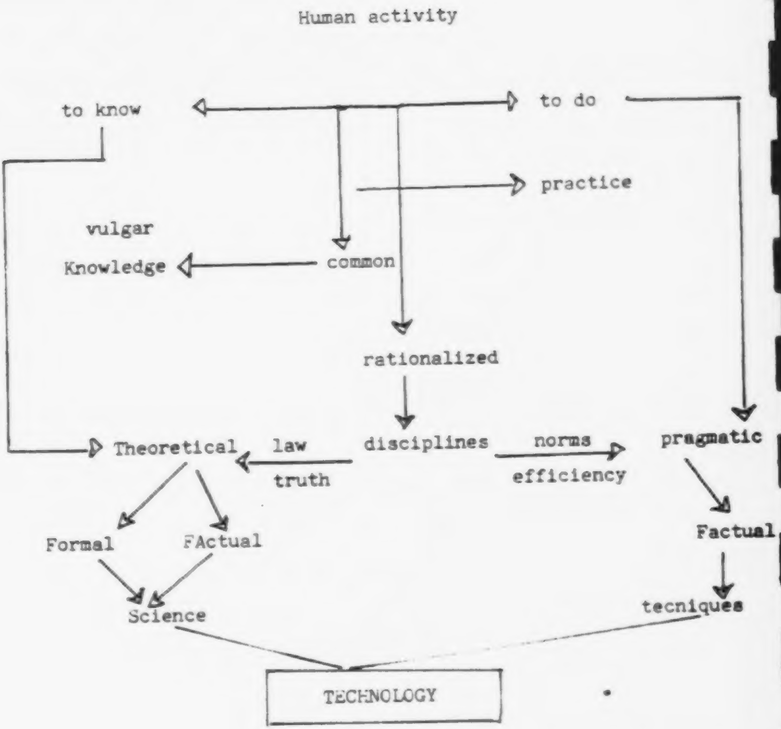
Education is a complex object to be known or analysed. To accomplish a more comprehensive study, it is necessary to obtain the support of a series of disciplines that make up a wide spectrum on the matter. Thus, Phylosophy, Biology, Psychology, Sociology; among others, elucidate the theoretical foundations about the process, whereas Curricular Planning, Evaluation etc produce both accurate information and the necessary techniques to face and solve educational problems efficiently.

Pedagogy is the discipline that studies Education. Even though it has been widely defined, positive results have been scarce. In fact, attempts have failed to produce any solid and clear definition. As an example, it can be said that Pedagogy has been consecutively and concurrently defined as an art, a science, a method, a theory or a practice. If only the terms "science" and "art" are analysed, it can be concluded that there exists confussion and ambiguity concerning the definition: while science is based on objetivity, replicability and a method, art is subjective, a matter of uniqueness, inspirations and craft.

Analysing Pedagogy in terms of its aims, process and outcomes, it is possible to locate it in a field of the human activities that pretends to take advantage of knowledge so as to modify reality on the bases of a"truth" and "efficiency " criterion This is technology. Now then, man is always in the process of becoming. There is a distancy between what he is and what he wants to be. This distancy can be defined as needs, which make man to reach out and be inserted within a defined environment. On the other hand, man to survive needs to perform a series of acts so as to know and control nature in terms of using, adapting and implementing the scarce available resources. To achieve this aim, two tasks are required: to know about nature to obtain explanations about things, and also to accomplish certain others (create, adapt, implement etc). Human activity, then can be directed to the "knowing" or the "doing". If the first activity is guided by rational procedures, theoretical knowledge is organized (which is the bases for scientific disciplines). The doing, to be sucessful must be capable of modifying the object adequately on the bases of a body of norms (techniques) that will set the patterns of actions and directions to achieve the desired aims.

But nonetheless, there is still another type of discipline that is located between the two alluded. This activity is technology which results from the encounter between scientific knowledge and certain techniques. Traditionally, however, this discipline has been associated solely to sophisticated machines or complex physical structures. But "while machines are an indispensable part of technology, they are only an outward, visible manifestation of a process". (Trzebiatowsky, 1969). The whole attention and the criticisms has centered mainly on the use, overuse or ill use of mechanical and electronical equipment. Man, consequently has tended to be confused or lost and even manipulated by this entangled net of connectors, computers etc. But, it seems indispensable to activate the real meaning of technology and asses that devices as well as procedures are technological results. Galbraith (1969) defined technology as the application of scientific or any organized knowledge to practical tasks. Technology, should be associated with a body of both knowledge and norms, thus producing a sort of synthesis between truth and efficiency, science and techniques, systems of laws and systems of norms.

Diagram


Human activity
to know
to do
practice
vulgar
Knowledge
common
rationalized
Theoretical
law
truth
disciplines
norms
efficiency
pragmatic
Formal
FActual
Factual
Science
tecniques
TECHNOLOGY

Amengual (1973)

As it can be seen, machines are not the only result of technology. Efforts to change and/or applicate the obtained scientific knowledge to modify reality can also be considered of that type. When this use and application is done to modify man's behaviour and thus induce learning, then, it is possible to talk about Pedagogy. This discipline can be defined as the body of specialized knowledge and norms that synthesizes and applies the individual approach of disciplines (Psychology, Sociology, Philosophy among others, that provide with the information about the aims of education, the subject of the process, the social aspects of it) and certain techniques,(that will enable teachers to identify, delimit, diagnose, determine objectives, plan, sequence instruction etc) to induce learning.

The teaching - learning concept has been dabated for years. Results have varied according to culture patterns. Nevertheless, the emphasis has been mainly on the teaching process. One of the debates has been centered on the question; Is teaching an art or a science? Perhaps, the former concept has conquered the largest quantity of followers, especially in terciary education. It has been assumed that teachers have certain built-in characteristics that make them automatically born teachers (Prieto, 1983). This approach neglects the fact that the teaching-learning process requires, necessarily, to come to concrete results and produce desired outcomes. So teaching can be considered a mutually observed relationship with the possibility of being defined, systematically examined and consequently improved. (Popham and Baker, 1975).

Terciary education seeks for the fullfilment of determined and specific outcomes: to get students acquainted with bodies of knowledge related to certain disciplines, and/or to train them with the necessary skills and abilities to behave professionally. Terciary education seeks for effectiveness. But this effectivity not necessarily should be related to expensive and elaborated technological equippment. The educational process cannot be improved or designed from the outside. The bases for a really effective process lie in well defined educational goals, adequate knowledge and means, rational organizations of the environment etc. While educational media can help in the solution of a problem, there is still a need for selections of strategies, organization of resources, methods etc that develop and implement the process and consequently increases the possibility of achieving the expected outcomes.

Teachers are not supposed to transfer the book knowledge into their students' mind. Their tasks are not to narrate events, to inform about discoveries or theories, to show or prove facts etc. These tasks can be certainly be accomplished by electronical apparatus, films, computer assisted instruction, programmed instructions, T.V. programs, audio recordings etc. Teachers appear primarily as the facilitators of the encounter between students and knowledge. They are sources of growth and development of a cognitive and affective system that enables students to inquire, seek analyse and discover the world on their own. Gagne (1979) says that teaching is related to the process of modifying the students' behaviours, developing capacities that will make them produce things they couldn't do before.

It is a fact that many variables will combine and affect the quality of the process. Thus, learning will be different to every student, depending, for example, on each student expectation in relation to the course, task or bibliography, the amount of the previous knowledge, their personal aims etc (Jones, 1981). Nonetheless, whatever the conditions established for the teaching-learning process, it must always be accomplished on rational bases and be effective.

Pedagogy, broadly conceived, involves a commitment to a process which implies practical tasks, and consequently the solution of problems. A technological approach will encourage teachers to applie the available scientific knowledge as well as the known techniques to the solutions of tasks. The use of computer program, recorded message and in general, instructional media cannot be apposed to questioning, organizing students, applying theories etc. These are all equal technological efforts that will help teachers and students to use their energy efficiently, to release human efforts to more creative work and thus produce better outcomes. The rational use of procedures, as well as media, will help teachers and consequently humanity to save considerable energy, time and money.

On the bases of the previous analysis, it is obvious the need for transforming the approach towards technology into a positive social function. This attempt would produce a reversion in the conception towards it, recovering its actual meaning and relating it to the creation and improvement of new and better individual and collective life, through a new efficient teaching - learning process.

References.

1) Amengual, A (1973) "Reflexión sobre Tecnología" en *Estudios Sociales*, Nº 4.

2) Gagne, R. (1979) "La Tecnología educativa y el proceso de Aprendizaje" in *Tecnología Educativa*, Nº 1, v 5, 1979 pp 6 - 21.

3) Galbraith, J (1969) *The New Industrial State*, Houghton Mifflin Co, Boston.

4) Jones, J (1981) "Students' Models of University Teaching" in *Higher Education*, 10, Nº 5, pp 529 - 549.

5) Prieto, M (1983) "Some Assumptions about Teaching and Learning in Terciary Education of Developing Countries" in *Higher Education by the Year 2.000.* Congress Preparatory Papers, Vol II pp. 45 - 54.

6) Trzebiatowsky, G (1969) "Educational Technology and the Elementary Teacher" in *Educational Comment*, College of Education, The U. of Toledo, June 1969.

PROFILE OF A UNIFIED CONCEPTUAL RELATIONS METHODOLOGY AS A MEANS OF INTERNALIZING STUDENT RESPONSE TO THE SELF-PACED LEARNING SYSTEM

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EDUCATION is conceived as the set of methodologies and procedures aimed at building and consolidating human attitudes and behaviour. Education has a major role to play in creating the universe we call "social being."

GUIDANCE in achieving this universe will be the end-product to be reached by the "internalizing process" of knowledge gained from formal and non-formal education.

DIRECTED ACTION arises from the self-organized rationality of one's own capabilities. The conceptual relations linkage must be previous to any decision making. It will be the framework of the task, displayed as a commitment to society.

Teaching and learning should be enhanced as a screening tool to avoid "cramming," deleterious to intellectual potentialities. From a holistic evaluation the sense of the action here outlined implies a protective role towards "social being."

As a corollary the author underlines:

CONTINUITY in exercising a permanent handling of conceptual relations with a structural layout which will prepare us for a coherent treatment of any subject to be studied. This way any problem can be overcome and solved.

THE FEELING OF SATISFACTION. To obtain this, in the above described perceptual scenario, it is essential to use LOGIC, IMAGINATION AND CREATIVITY as primary action components.

The author has practised this methodology at his university chair and he finds that it provides pragmatic avenues for later learning.

The following phases concerned with the methodology development are prescribed below (cross-references in the appendix):

PHASE "A": determines the conceptual level to be reached in each stage based on the subject literature studied;

PHASE "B": the conceptual levels must be self-defined in a dominant or subordinated sequential position, thus leading to the establishment of a causal-flow of knowledge identification;

PHASE "C": prescribes the "relationship degree" between the levels as fixed. Each position with respect to a previous level or a subsequent one must be clearly established. Here the student will strive to create a detailed or aggregated resolution stage in accordance with the target context to be met by the knowledge analysis;

PHASE "D": provides the "conceptual unity of the levels prescribed sequentially. This unity or unification arises from the transparent application of logic and imagination to the subject's reality. The student by the usage of optional brackets will reflect his thinking about the coupling of levels. This procedure consolidates the unified subject knowledge so far gained;

PHASE "E": a validating process, verifying by inquiry that the flow-chart of sequential setting levels performs as a manageable model, either isomorphic with the reality of the subject studied, or permitting the understanding of interactions and interrelations between levels as structured;

This flow of knowledge should be perceived by the student from the upper level to the lower one and vice-versa;

PHASE "F": detects a synthesis from the reasoning and causals as shown by the subject literature studied. The student feels satisfaction in experiencing himself the learning methodology and the feasibility of steadily internalizing the essential inputs for a real and pragmatic conception of knowledge.

The author after proving the effectiveness of the methodology concludes:

1. It is feasible to introduce the phases above described into any subject literature prepared for teaching;

2. Teaching performance is aided by a quick detection of the student's brain capabilities - outside his mentality - in facing treatment of the problem studied, mainly in respect to the synthesis and analysis requirements;

3. The reasonable time consumed by the application of this learning method embodies valuable personality training;

4. The professor must prepare motivations for the students to reach timely uniformity in their appraisal of the subject scope. The students freely acknowledge the value of participating in a structured presentation of the basic subject literature;

5. The chair may help the students by providing additional time to improve their compilation of applied studies and investigations;

6. This student behaviour produces insights for finding reliable cognoscitive ordering. The learning process requires the student to be the protagonist in defining hierarchical aims in the subject analysis leading to a synthesis afterwards;

7. Syncretically, this methodology replaces the traditional MEMORIZING TREND with purposeful attention to intelligibly and structurally expand the reasoning basis.

Finally, the author emphasizes:

EDUCATION - mainly in Improving University Teaching - becomes greatly concerned in providing and promoting from the Chair the student's improvement. This can be done by directed action upon lifelong education standards. The student becomes able to look forward by THINKING-VISUALIZING before he express his ideas by SPEAKING.

If the student acquires these atributes in high school, before entering college, it would be possible to correct FORMATIVE DEFICIENCIES which make interdisciplinary work difficult when the student arrives at a more advanced stage.

This is CRUCIAL in our time in view of the absence of viable solutions to relieve the above context, in the growing tendency to social development. This objective can't be reached without high quality human education.

This stage of change could be greatly improved by introducing ECOSYSTEMOLOGY in our teaching and learning premises (PURY, G.S., 1967, Banaras Hindu University)

KEYWORDS AND PHRASAL TERMS

Universe; social-being; internalizing learning process; conceptual relationship linkage; cramming; protective role; Logic, Imagination and Creativity; causal-flow of knowledge identification; relation-degree; detailed or aggregated resolution stage; target context; conceptual unity; transparent application of logic and imagination; validating process; flow-chart of sequential setting levels; manageable model; isomorphic; pragmatic conception of knowledge; quick detection of the student's brain capabilities; personality training; compilation of applied studies and investigations; reliable cognoscitive ordering; protagonist; defining hierarchical aims; syncretically; memorizing trend; thinking-visualizing; formative deficiences; interdisciplinary work; advanced stage; crucial in our time; this state of change; Ecosystemology.

LITERATURE

1. COOMBS, Phillip H. (1982)
"Critical World Educational Issues of the Next Two Decades" (In: IERS AWARENESS LIST Nr.11 Unesco, Int. Education Bureau UIE00567 p. 6) Geneva, Switzerland.

2. HAUSTEN, Hans-Joachim (1981)
"Im Unterricht auf Lebenslanges Lernen Vorbereiten" Berlin p. 978-987. Padagogik; Vol. 36, Nr. 12 (In: IERS AWARENESS LIST Nr. 11, Unesco. Int. Education Bureau. UIE 00560/p.5) Geneva, Switzerland.

3. PURI, G. S. (1967)
"Ecosystemology and Problems of Developing Lands" (In: Proceedings of the Symposium on Recent Advances in Tropical Ecology Varanasi, January 16-21, p.35) Department Agric. Botany, University of Science and Technology, Kumasi, Ghana, Africa.

4. VIDELA PILASI, E. O. (1966)
"El Investigador Cientifico y su Relacion con el Medio Social que lo Rodea" Revista "Ciencia e Investigacion" Vol. 22.(1). Consejo Nacional para el Progreso de la Ciencia, Buenos Aires, Argentina.

5. VIDELA PILASI, E. O. (1982)
"Our Needs in Education from a Changing World Requirement Platform" Annual Int. Congr. of the Swiss Society on Education Research (SSRE) 5 and 6 of November, Lausanne, Switzerland.

CHALK-FACE EVALUATION AS A WAY TO THE PROFESSIONAL DEVELOPMENT OF A TEACHER

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1 The Ulster Polytechnic has recently introduced a new in-service BEd degree programme for non-graduate teachers in schools and colleges in Northern Ireland. Central to the programme as a whole is our recognition of the value of 'chalk-face evaluation'. From this, and our belief that it is teachers themselves who are in the best position to know the problems they face in the classroom, the curriculum actually takes its direction from the teacher's perceptions of the value of his own classroom practices and his attempts to shape them to the needs of the learning situation.

In this paper I shall extend this rationale and then give the flavour of the practical research teachers do taken for the first unit of study. I shall go on to give some teachers' comments on the experience they have had of this unit and conclude by suggesting that this approach is one way by which an educational institution committed to the notion of professional development can help practitioners improve their practice without needing to intrude in the school where the teacher works.

2 Rationale

A teacher's actual efforts to improve the quality of teaching and learning in his own classroom have, in the main, been ignored for the purpose of obtaining an in-service degree award. Typically fed a theoretical diet of the so-called Disciplines of Education, abstracted from the reality of the classroom, he has been expected later to apply what he has learned to his classroom practice. This task, as teachers have often told us, is impossible. For, having had first to acknowledge the complete divorce of theory and practice the teacher is afterwards expected to knit them together again. The teacher does, of course, gain personal status with a degree of this sort; but he can effect little change in the classroom for all his newly acquired knowledge. Yet it can be argued that a teacher's active concern to change things in the classroom to the benefit of his pupils is one, if not the most vital way, of actually improving the quality of educational provision in a school or college.

Over the past few months, members of the Faculty of Education have worked to produce a degree structure that focusses on a teacher's efforts to reflect on his classroom practice in order to improve things. It is a radical departure from the typical BEd programme. Gone is the belief that the lecturer knows best what a teacher ought to study; gone the pre-planned theoretical curriculum; gone, too, is the idea that the lecturer should do the thinking for the student along with the belief that the Polytechnic campus rather than the classroom is the proper place to deal with educational problems. In place of these views we have acknowledged that the teacher's own classroom is where research into teaching and learning must be focussed; that any improvement in the quality of educational provision will arise and be sustained by the teacher himself; that the teacher, as an active professional, knows best what the educational problems are in his classroom; and that with help from the lecturer, as a colleague, it will be the teacher himself who will plan and implement improvements. We have accepted the principle that teachers themselves should determine the shape and substance of their own professional development. Thus, our in-service BEd course must always:

be responsive to the local needs of teachers;

be organized so as to allow for freedom of choice of what should be studied;

promote an improvement in the quality of education in Northern Ireland schools and colleges through professional enhancement, and help each teacher develop professionally through constant research into his/her own classroom practice.

To achieve these aims we enter into negotiations with groups of teachers before any particular programme of study is designed; but in order to enable each teacher to investigate his classroom context we have designed three additional and compulsory units of study in the philosophy, methodology and techniques of Action Research. In these three units, we work alongside the teacher to help him in his analysis of the classroom context and in his application of action steps to ameliorate the situation in some way. These three research units along with nine other units designed in response to teacher concerns constitute the pass degree. The same three with an additional honours prerequisite unit, four elective units and a school-based project make up the honours degree framework. We have made a significant change in assessing students for the degree awards. There are no terminal examinations and no unit examinations. The only thing we can assess (and would wish to assess) is each teacher's ability at and effectiveness in researching his classroom context. We believe that through practice a teacher will get better at analysing real problems, formulating working hypotheses, planning effective action steps, implementing them, and evaluating his actions in the light of their consequences. The assessment criteria take these reflective and active aspects into account, and a case study account of the teacher's classroom research concludes each unit of study. Such a framework as this allows not only freedom of choice by teachers but has the added benefit that staff in every faculty and school in the Polytechnic may (and probably will) be called on to help teachers enrolled on this course. In anticipation of this, formal procedures for the design and validation of units have been set-up by the Polytechnic. Already areas of concern having to do with the management of schools, and language and reading programmes have been transformed into units of research and are being operated with groups of teachers at Armagh and Craigavon.

3 The Experience

I can best show the experience of being on the course through the activities of the first research unit that the 58 teachers enrolled have just completed. The purpose, assignment directions and the syllabus for 15 weeks is given to each teacher. It reflects our belief that an individual 'learns by doing' and that understanding comes about as a result of reflecting on practice. Thus, we are asking the teachers to undergo a process. We write:

(a) The Direction

By providing you with experience of ways in which improvement can be attained we intend that you will become capable and confident in self-monitoring. Self-monitoring requires the collection of evidence about classroom practice and the analysis of that evidence. Through critically reflecting on what you have been doing a greater understanding will be gained and ways of bringing about improvement can be identified. The cycle of self-monitoring begins with you identifying an improvement you would like to bring about in your classroom: it is completed with the analysis of evidence on your attempts to make the improvements. During this analysis further ways of bringing about improvement can again be devised and explored.

(b) The Weekly Process

Week

1 Introductory lecture and seminar: Action Research, the model.

Task for Week 2: brief statement of your major purposes as a teacher.

2 Lecture: Action Research the Theory.

Seminar: Consideration of statements of purpose.

Task for Week 3: read example transcript.

3 Seminar: analysis of transcript.

Task for Week 4: identify classroom issue.

Task for Week 6: write a descriptive account, take a series of photographs and transcribe a tape of yourself teaching, (preferably of one lesson).

4&5 Group Tutorials: issues, identification and clarification.

6-9 Seminars: analysis of classroom evidence; identification of action steps.

Task for Week 10: collection and analysis of classroom evidence on implementation of action steps. Evidence should include an observer's account, interviews with pupils, and a transcript (preferably of one lesson).

10-13 Seminars: analysis of classroom evidence monitoring action steps.

Task for Week 13: completion of log book for submission, including cumulative analysis of progress to date and personal reflections on the value of action research.

14-15 Return of assignments: course evaluation.

(c) The Assignment is simply a record of each teacher's experience of the process he has undergone.

From Week 1 you are expected to keep a log book of your work during the course. In it you will record the tasks you are asked to undertake, the responses you make to these, the problems and successes you experience, the classroom data you collect and the analyses you make of these. You should also record ideas you consider to be of significance which arise during each session of the course. The log book will cumulate in a critical analysis of your progress during the course. It should focus sharply on your work in the classroom. The log book will also provide a means for conducting an evaluation of the course itself. It is to be submitted on Week 13.

4 Analysis

The medium through which the teachers analyse their classroom activities is, of course, the lesson transcript. Each teacher decides on a lesson to analyse and then records this lesson on a cassette tape recorder. The transcription of the recording is brought to a group tutorial session where he, his colleagues and the tutor engage in an analysis of it. Analysis is not easy. Indeed, I should say that it is the most difficult activity for all the teachers. But it is vital since arising from it the teacher himself can assess what changes are needed on his part either to better meet the purpose he had in mind for the lesson or to decide on steps he should take to improve the lesson. It is in these tutorial sessions that we believe the way to professional development lies; for it is out of a teacher's thorough and effective reflection on the purpose, actions and consequences in a classroom situation that problems can be discovered and decisions made on steps to ameliorate it.

The following transcript of part of a lesson is taken from a teacher in my tutorial group and is typical of the process of analysis. William's aim for this lesson with 30 ten-year old pupils was "For the class to be able to recognise the need for a standard of measurement, and notation of the same with particular reference to metres".

1 Teacher: If we wanted to measure the length and width of this room, how could we do it?

Gillian: Kilometres...(children laugh and say "Kilometres, ha! ha!" Quite a few say "Metres").

Teacher: Use metres. Is there any other way we could do it?

David: Yeah, feet!

Teacher: Any other way we could measure it?

Paul: Square metres.

Teacher: Any other way?...Well, Ian, take one of those metre sticks and measure the length. You give him a hand, Cheryl..... While those two are doing that, Manda, you and Leanne measure the width with the other one... Now while they're doing that, is there any other way we could measure the length and width of this room?...

Neil: Tables, tables.

Teacher: Yes, we could. You mean these tables you're sitting at... right we could do that...any other way?... now forget about them (children measuring). Neil has said we could use tables...any other thing we could use?...

Neil: Paces.

Teacher: What do you mean by paces?

Neil: Steps.

Teacher: You show the rest of us what you mean. (Neil gets out of chair and demonstrates).

Neil: Like that.

Teacher: Right. Well now you go ahead and measure from the back to the front in paces...

Leanne: Seven metres and nine pieces left.

Teacher: Seven metres and nine pieces left...could we do this way the same as Neil's doing his way?

Class: Yes.

David: Everybodys different size of paces.

Teacher: Well, then, what would we need to do?

David: Make the same measurements.

Teacher: Well, who should do it then?

David and Lyn: You.

Teacher: Who did the length?

Class: Neil.

Teacher: Who then should do the width?

David: Neil.

Teacher: Yes!...(to Neil) Now don't say yet what you got and come now and do the width...Now Jason, you do the same as Neil just did...just to compare the two...Now while they're doing that, is there any other way we could have measured the length and width?

Adrian: Feet...(David, in disgust, "That's what I said").

Teacher: What way do you mean...(pupil demonstrates). Right, you go ahead and do that!...any other way?

Jill: Hands.

Teacher: How do you mean? (pupil demonstrates). Right,you go ahead and do that!...Now you people that are measuring, keep the figures in your head...

David: Like this here with your arms, round and round (arms stretched out).

Teacher: Well, you go ahead and do that...any other way?...Now these two have measured it in paces, Adrian's doing it in steps, Jill's getting her hands nice and dirty...Do you think

David is going to get a really good count?

Class: No.

Teacher: What would he have needed?

Neil: People to mark where the end of his fingers was each time...

After some difficulty, because not all the children understood what Neil meant, we finally managed a measurement in David's way.

...Right, the boys that did the measuring in paces, what did you get?

Jason: I got 12.

Neil: I got 17.

Teacher: Right, according to Neil it's 17 steps, but according to Jason it's only 12...what about this way?

Neil: 10.

Jason: I got 11.

Lyn and Karen: Eleven!!

Teacher: Jill, what about yours?

Jill: I got 72 that way and 43 this way.

Teacher: We didn't get anybody else to do it that way.

Class: No.

Teacher: Maybe Andrew you go and do the same as Jill did...

There then followed mixed discussion/confusion about the different numbers in the different ways of measuring.

Teacher: What makes the problem of finding the length and width of our classroom easier?...Lisa...

Lisa: No answer.

Neil: Equal pieces of wood.

Teacher: Equal pieces of wood, so many equal pieces of wood and what do we call our equal pieces of wood?

Neil: Metres.

85 Teacher: We got different answers because we were using different ways of measuring and we had different sizes of people, but what would happen if...Cheryl, how many did you get?

Cheryl: 8 metres.

Teacher: What should Leanne get if she used that as well?

Jill: 8 metres.

90 Teacher: What should Adrian or Neil get?

Class: 8 metres.

Teacher: Right, if we all want the same answer we should all use the same thing...now,

General hub-bub then followed because by this time Andrew had just
95 finished measuring the room with his hands.

Teacher: Well, Andrew.

Andrew: 61 down that way and 41 across.

Teacher: What did Jill get?

Jill and others: 72 and 43.

100 Teacher: They got different answers, but the room is still the same size...
We need to use...

Neil: The same measurement.

Teacher: The same way of measurement. OK that'll do. Sit down.

At least five explanatory hypotheses can be made through inspection of the transcript:

First Hypotheses: The teacher conducts the lesson by posing questions to the pupils about different ways of measuring the classroom (lines 1,7, 9-13, 16-18, 28, 32, 42, 52).

Second Hypothesis: Five pupils give different ideas for measuring the room (lines: 3,6,7, 14,19,21,44,46).

Third Hypothesis: The teacher tells specific pupils to measure the room in the way the five have suggested. (lines: 15,25,41,45,52,74).

Fourth Hypothesis: The pupils give differing results from using their methods of measuring (lines: 63-64, 67-69).

Fifth Hypothesis: The ensuing teacher-led discussion leads to the conclusion (given by the teacher) that some ways of measuring lead to different answers for the same room. (lines 77-103, especially lines 84-85).

Concluding Hypothesis: Although five pupils suggest and try out different ways of measuring the classroom using feet, hands and arms only one pupil (David line 33) early on suggests they should use "the same measurement". While the discussion that ends the lesson is based on the pupils practical experience it is the teacher who concludes that "if we all want the same answer we should all use the same thing." (line 92). Neil is prompted to say "The same measurement (line 102) by the teacher.

In this lesson transcript there is insufficient evidence to suggest the pupils realise the need to use a standard measurement even though the class as a whole understand that "If we all want the same answer we should all use the same thing" (line 92 following line 91).

> There is a difference between understanding that the same measuring device, when used, will provide the same answer each time, it is used and recognising the need to use a standard measuring device each time one measures anything. The learning activities in this lesson are focussed on the former while the teachers aim is centred on the latter.
>
> In the light of this analysis of his lesson what steps should William take to ensure that his aim is realised?

5 Individual Comments of the Unit

These activities of data collection and analysis of each teacher's classroom practice constitute one way, we believe, of helping experienced teachers develop professionally. For some of them it has been an uncomfortable yet ultimately worthwhile experience of a developing personal confidence along with colleagiality with others. Albert sums it up in his log book as follows:

> Many of my earlier critical comments were due to the fact that the emphasis of this course, unlike any other, is on the individual, ie a research course where the teacher analyses his own work...After ten years teaching it is somewhat difficult to organise oneself into a course of study. Teachers often become set in their ways and do not respond to change let alone analysis of their teaching. But the value of analysing their own teaching with colleagues and the tutor becomes more obvious as one does it.

Individual development is not the end of the matter. Contrary to belief, the teacher is not isolated within the classroom; he is part of a teaching team within the school. His or her efforts to improve the quality of the learning experience in the classroom have ramifications throughout the school. Marie noted in her log book that:

> the fact that four other members of my school are on the course has helped a lot;...and our discussions in the staff room on Tuesday mornings (the day after tutorial sessions are held) has caught the interest of other members of staff as well as that of the principal and vice principal. Indeed, this feeling of support and interest from school has led to renewed enthusiasm on our part.

It is our belief that theory is generated from practice. Already, some teachers on the course have come to see the significance of issues embedded in the classroom reality. "It is only when I saw the various lessons transcribed and discussed", writes Francis in his log book, "that I realised how much the teacher dominated a lesson without realising it".

In my tutorial group of seven every teacher in at least one of the lessons felt compelled to write important words on the chalk-board and get the pupils to write them down. This happened whether the teacher was teaching 10 year olds or 15 year olds and whether the topic was geography, dress-making, art or craft design. Veronica was struck by this oddity and wrote to herself in her log book "Should every teacher be a teacher of English? The question really is "Is every teacher an English teacher?" She went on to write a carefully considered position paper on these questions drawing on evidence from her colleagues lesson transcripts. In so doing, she has generated her own theory on this issue.

Bernadette also writes a position paper in her log book. She attempts to identify important issues about teaching and learning that have arisen in the lessons analysed. She identifies five significant points that this group of teachers have found from their lessons:

(a) Is not the knowledge that the teacher has of her pupils an important factor in "where" the teacher starts?

(b) The pupils' culture and the teacher's culture are not necessarily the same. The fact that working-class children are at a disadvantage in comparison with the middle-class values, beliefs, habits and practices of the school is very evident.

(c) It is difficult for a teacher to refrain from stating his own values.

(d) The gap between teacher and pupils is evident in the way each uses a different language code in the classroom.

(e) The interest level of the pupils is very important. This may be due to the relationship they have with the teacher or to the relevance of subject matter to them.

To my mind, these points Bernadette raises are the sorts of things that every teacher ought to consider since they affect the quality of learning in the classroom. It is one thing to urge teachers to consider them; it is far more effective for them to be seen to arise in the course of their own teaching as problems in which they as teachers are involved.

I have taken these comments from teachers in my tutorial group to show that they feel they have learned by doing, that they are perceiving issues of fundamental importance that arise in the course of their own teaching, and that they are beginning to generate their own theory about aspects of education as a result of reflecting on their own practice.

6 Conclusion

The Ulster Polytechnic BEd degree course for experienced non-graduate teachers in Northern Ireland that began in September 1983 is not only an example of decentralised provision with sessions held in the teacher's own locality but individual improvement is held to be of paramount importance. This strategy of pooling human and physical resources of help each teacher improve his own practice is one way by which an institution of higher education can become involved in the process of professional development. We believe there are three advantages to be gained from this approach:

(a) the dichotomy between theory and practice can be overcome; teachers learn by doing and generate their own theory as a result.

(b) the focus of study is the actual context not a simulation of it. Thus the problems that are analysed are real not pseudo-problems, and

(c) there is no intrusion by the institution into the school where the teacher works; school principals need not feel their autonomy is threatened by an alien but powerful organisation.

REDUCING STUDENT ATTRITION

FRIDAY, 6 JULY

1430 - 1600

IMPROVING FRESHMAN ACADEMIC ACHIEVEMENT

Alice Donaldson
Purdue University

All seasons in life have their particular trauma. Our educational years are not exempt. Psychologists who study emotional behavior frequently suggest that times of new beginnings are periods of high stress. If this is true, the organizational pattern of our schools is responsible for many stressful periods in the journey K through 16. New classes, new classmates, new teachers, new buildings are routine even for children whose places of residence do not change. In recognition of problems associated with "new beginnings" educators have long attempted to ease transitions with various programs designed to prepare participants for the new experiences.

To help students be ready for the freshman year in college which may have increased trauma because it often includes a break with the home environment, high schools have an assortment of programs ranging from college preparatory courses and counseling to such things as a reception joining freshman alumnus with the present senior class. Colleges and universities also do their part. Many arrange for a day on campus, assign special counselors, and carefully construct orientation programs. Despite these efforts, Pantages and Creedon report in a study in the Review of Educational Research that of six students who drop out of college, three do so in the first year.[1] To explain this drop out rate for freshmen, studies have attempted to link size of high school and home community[2], grade point average,[3] SAT scores,[4] and faculty contact[5] and poor advising[6] with the students who leave. Results have not established any definitive cause although lack of college academic success, regardless of reason, appears to be part of the picture.[7]

The study reported in this paper explores student views on the freshman year. The purpose was to gather information which could be used to improve academic achievement. One hundred and thirty-four survivors or 134 juniors, and seniors enrolled in upper-division communication courses at Purdue University completed a questionnaire asking for background information, for an evaluation of their high school preparation for the courses usually taken in the freshman year, for an indication of whether or not they had used any of the academic aids provided by Purdue, and for suggestions which might improve freshman academic achievement. While the size of the study does not permit blanket generalizations, the information gained adds to knowledge about the college freshman's adjustment and provides content which may be useful for administrators concerned that "drop-outs" become "stay-ins."

Although the 74 men and 60 women surveyed were enrolled in upper division communication courses, their diversity in background and majors offers the opportunity for diverse views on high school training and the freshman year.

Table 1
Size of High School

Less than 250	18
More than 250	20
More than 500	16
More than 750	23
More than 1,000	57

Table 2
Size of Community Where High School was Located

Less than 1,000	5
More than 1,000	14
More than 5,000	13
More than 10,000	20
More than 25,000	30
More than 50,000	52

Tables 1 and 2 show that the students surviving the freshman year who were surveyed represent small high schools and small communities as well as large schools and cities. Thus, any suggestions to alleviate problems which might occur because of the size of the university come from the perspectives of those who might be expected to be somewhat overwhelmed by the change as well as those who have, no doubt, had some experiences with problems arising from size of institution.

Table 3

High School Rank

Top 5%	28
Top 10%	33
Top 25%	46
Top 50%	22

Table 3 reveals the interesting fact that almost half the students surveyed were in the top 10% of their high school class while slightly more than half were below that mark. This information emphasizes the "survivor" quality of some of the students. Certainly, those falling in the 25-50% range of their high schools might be expected to have trouble competing with ones in the top 5%. The average college grade point reported by the students was 4.818. This number compares favorably with the average for all Purdue under-graduates for the fall semester of 1984 — 4.655.[9]

Table 4

Majors

Com. and P.R.	48	Landscape Arch	2
Supervision	8	Rest. & Hotel Inst.	1
Chem. Eng.	7	Env. Design	1
Animal Sci.	7	Child & Fam. Sci.	1
Ag. Econ.	6	Civil Eng.	1
Management	5	Ag. Eng.	1
Ag. Mech.	5	Aero. Eng.	1
Visual Com. Design	5	Comm. Health	1
TV & Radio	5	Mech. Eng.	1
Ind. Mgt.	4	Adv.	1
Financial Adv.	3	Photography.	1
Forest Eng.	3	Elec. Eng.	1
Ag.	2	Retailing.	1
Ag. Ed.	2	Hort.	1
Jouranlism.	2	Anthropology	1
Political Science	2	Computer Sci.	1
		Pharmacy	1

Since the students receiving the questionnaire were in upper-division classes in communications, the 48 Com. and P.R. majors is not surprising. Table 4, however, reveals that the survey reached representatives of all schools and 33 different majors.

Thus in background, interest, and achievement, the 134 students in the survey bring many points of view from which to draw information about improving freshman academic achievement.

Table 5

Evaluation of High School Preparation for Core Courses at Purdue

	Excellent	Above Avg.	Satisfactory	Below Avg.	Poor
Eng.	48	37	31	1	7
Com.	16	28	29	11	7
Chem.	24	27	29	11	11
For. Lang.	25	27	27	18	12
Hist.	12	33	63	14	2
Bio.	24	36	49	8	4
Econ.	6	14	29	18	6
Math.	28	43	34	16	10
Physics	5	20	23	7	6
P. E.	36	28	39	9	3
Aesthetics	18	30	23	6	1

The evaluation of high school preparation for core courses at Purdue presented in Table 5 contrasts vividly with current articles and reports condemning high school preparation.[10] More than 1/2 of the students were well-pleased with courses in English (85), and Mathematics (71), subject areas frequently targeted for criticism. Other courses receiving praise were Physical Education (64), Biology (60), and History (45). An inclusion of students indicating satisfaction with high school preparation with those saying training was excellent or above average provides even higher rankings. Economics was the only course having more students saying preparation was below average or poor in contrast to the number who said the courses were excellent or above average. Although no high school training students for college should be satisfied when students look back on their preperation as inadequate, the survey suggests that improvement of academic achievement of freshmen may not rest as much with the high schools as some people have insisted.

Table 6

Use of Help Facilities at Purdue

	Used	Not Used
English Writing Lab.	20	114
Instructor Help Sections	44	90
Other	12	122

Inasmuch as the students polled were generally satisfied with their high school preparation for the core courses, the information presented in Table 6 indicating minimal use of help facilities is consistent. When dissatisfaction with high school courses combines with the offering of help sections in those subjects, more students use those facilities than use the writing lab or other help.

The final question on the survey asked for suggestions to improve freshman academic achievement. Two students said their first college year had been a good one, but the eighty-five percent offering suggestions indicate wide-spread concern and understanding of freshman trauma. Although there was no structural format for comments, three groupings emerged: ideas for the high school, advice for freshmen, and changes or modifications for the university.

Although generally pleased with high school courses, the students believe college preparation should be strongly emphasized: it should begin in the junior year, and the courses should be difficult. In addition to four semesters of mathematics and science, the college-bound student should take economics and a foreign language. There should be advanced courses in English, particularly in critical writing. Teachers should stress the importance of good study habits, class attendance. and learning while counselors should encourage students to think about the future and should emphasize the importance of high school in college success. One student offered what could be a summary statement for all of the comments on the high schools by saying, "We should not be allowed to 'goof off.'"

Many of the comments stated the college freshmen must take responsibility for themselves. They must learn how to study and then study. They must have positive habits and resist temptation. Recognizing the difficulties of "wipe-out" year, the students recommended a light load of courses and the post-poning of difficult courses like chemistry to the sophomore year. Subjects taken should include a computer course and all should be basic to any field in case of a change in major. There should be variety in the class schedule and at least one *fun* course. Freshmen must know what to expect, should know what they want to do, get help when it is needed, get acquainted with instructors, and show interest. In addition to academic suggestions, the students advised the freshmen to participate in campus activities and be able to find a release other than drinking.

The students surveyed believe the universities obligation to be two-fold: actual help to freshmen and improvement in courses and teaching. Although the survivors had made little use of existing help facilities they thought all help services were important and should be widely publicized. Available sample tests, identification of tutors, and a workshop on taking multiple choice questions would be useful. Orientation programs should deal with the difference between high school and college and have sessions on how to budget time and money. Viewing counsellors as one of the chief help agents, the students felt more counselors might result in better guidance in selection and scheduling of courses. If counselors could be in actual touch with courses, they could give better advice. They should make students feel welcome and at be alert to individual aptitudes. Being willing to work with freshmen means listening to problems and being able to direct them to specific help services. One student suggested all freshman engineering counselors should take courses in communication thus learning how _not_ to treat students as numbers. College counselors could also help ease the freshman year trauma by going into high schools to share information about college life with both the college-bound students and high school counselors. Recognizing difficulties of cost and time in expecting more and better counseling, one student suggested upper class students could help in course recommendations, in the creation of a warm and caring atmosphere, and in helping students see the importance of university education.

Like counselors, teachers should be agents of help. More office hours at a variety of times would indicate students are welcome. Teachers should be interested in teaching and not consider that activity an intrusion upon research. They should be able to explain content without making students feel stupid. Personalizing teaching and smaller classes would give opportunity for one on one contacts. Large classes should frequently be broken into small instructional groups. There should be no deliberate attempt to weed out students. Recognizing the need for psychological confidence, teachers should set up small study groups. Above all else, they should care about freshmen.

Comments on courses ranged from requirements to suggestions on content and teaching. Students wanted more composition courses and more literature and grammar. Writing courses should be harder and more interesting. They saw no need for chemistry, physics, or foreign language courses unless related to the major, but they did opt for more required courses in history and computer science. Core courses, categorized according to major, could be made relevant to the students' interests. Opposing theory courses in the first year, they were adamant that course content should be basic, fundamental, and applicable to the real world. College field trips, laboratory exercises, and a workshop approach could inform and make education interesting. They believed in homework and felt tests should be over material covered and be given frequently, testing small units such as two or three chapters instead of five. Grades should reflect student improvement as well as mastery of content. Greater use of compentency placement tests would help student success as would separate classes for students who have not had high shcool college-preparatory courses. Expressing interest in a "freshman studies" approach, the students believe exposure to a variety of courses could lead to a more satisfying choice of major. Teaching assistants should be proficient in English and given some training in teaching. Textbooks could either be better or abolished. Apparently better meant more challenging, for one student suggested a "great books" reading program. These survivors of the freshman year seem to be asking for more work not less; they would like a liberal arts approach and believe the university can do make the first year significant, useful, and enjoyable.

The students responding to the questionnaire were not a perfect microcosim of the university but they brought to the study diverse background and represented all schools and many majors. Although they had survived the freshmen trauma, the quantity of their suggestions for improvement of academic achievement in that year, for high schools, freshmen, and university is perhaps evidence of some scars. Many of their ideas are practical and could easily be implemented. These realistic survivors of the system have not asked for their fellow freshmen a "hand-out" but rather for a hand-up."

FOOTNOTES

1. Timothy J. Pantages and Carol F. Creedon, "Studies of College Attrition: 1950-1975," *Review of Educational Research*, Vol. 48, No. 1, p. 49.

2. Ronald G. Downey, "Differences Between Entering Freshmen From Different Size High Schools," *Journal of College Student Personnel*, July, 1978, p. 358.

3. Kay A. Dey, "Attrition: A Practical Approach," *North Central Association Quarterly*, Vol. 54, No. 1, p. 20.

4. Pantages, p. 63-64.

5. Patrick T. Terenzini and Ernest T. Pascarella, "The Relation of Students' Pre College Characteristics and Freshman Year Experiences to Voluntary Attrition," *Research in Higher Education*, Vol. 9, 363.

6. Stacy E. Palmer, "Advice to Advisors: Faculty members May Face Increasing Pressure to Help Students, *The Chronicle of Higher Education*, January 18, 1984, p. 19. Beverly T. Watkins, "Students Like Classes and Dislike Campus Services," *The Chronicle of Higher Education*, July 27, 1983, p. 3.

7. Pantages, p. 64. John J. Gardiner and Ali Nazari-Robati, "Student Attrition Research: Implications and Strategies," *NASPA Journal*, Winter, 1983, p. 31.

8. Ernest A. Lynton, "Reexamining the Role of the University," *Change*, October, 1983. p. 19-23ff.

9. Office of the Registrar, Purdue University.

10. Jack McCurdy, "California Professors Recommend Program to Improve Skills of College-Bound Students," *The Chronicle of Higher Education*, Dec. 2, 1981. p. 6. Malcolm G. Scully, "Entrance Rules Tightened at Some Public Institutions," *The Chronicle of Higher Education*, Dec. 9, 1981. p. 1. "Speaking/Listening Fundamental in 'Project Equality,'" *Spectra*, December, 1981. p. 1. National Commission on Excellence in Education, "A Nation at Risk: The Imperative for Educational Reform," *The Chronicle of Higher Education*, May 4, 1983. pp. 11-16. "Newspaper Reaction to the Report on Excellence in Education," *The Chronicle of Higher Education*, May 11, 1983, p. 9. Carnegie Foundation Report, "Secondary Education in American," 1983. Report of the Twentieth Century Fund, 1983. The College Board Report, 1983.

PERSONAL PROBLEM-SOLVING SKILLS
AND ACADEMIC ACHIEVEMENT

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One way of modelling human psychological functioning is in terms of cybernetic or control theory. The work of Miller, Galanter and Pribram (1960) showed some of the promise of this perspective, and researchers have increasingly been adopting it as they have discovered its general integrative properties and its usefulness as a framework for both descriptive and prescriptive analyses of goal-oriented behaviour (e.g. Carver & Scheier, 1982). As Miller *et al.*, illustrated, desired outcomes (goals) can be arranged hierarchically in respect of their means-ends relationships. Almost any specific desired state of affairs functions for a person as a means for achieving other desired states of affairs. A person's route to any goal, therefore, can be portrayed as a hierarchical plan with higher-order or strategic goals toward the apex and progressively more detailed or tactical goals toward the base.

It can be useful to analyse the academic achievement of a student (e.g. his university degree) in these terms and treat it as an element in one of his goal hierarchies: the culmination of many subordinate activities, and yet itself a means to higher-order ends. It is clear from current models of human performance that the student's progress toward any particular goal in a hierarchy will be influenced by quite a variety of factors, only some of which will be open to control by him. So the student's plan, whether implicit or explicit in his mind, will be threatened at all hierarchical levels and within all sequential stages by such disparate factors as competing short-term gratifications, inadequate revision schedules, unanticipated self-esteem problems, feelings of apprehension, resentment or helplessness, uncooperative faculty, inappropriate instructional technologies, and so on and so forth. In short, he will repeatedly face problems: situations or states of affairs which deviate in some way from what he requires for satisfactory progress through his plan, and which he has to resolve in order to make such progress. By the time a student reaches the hurdles of his final examinations, therefore, certain limits will already have been placed on his performance by virtue of past events and the way he has handled them.

As educators and researchers have become more aware of the multiple influences on academic achievement, increasing attention has been given to the development of additional procedures for facilitating the achievement of academic goals. Some of these procedures have taken the form of programmes directed at specific problems such as test anxiety (e.g. Thompson, Griebstein & Kuhlenschmidt, 1980). Others have addressed simultaneously a whole series of potential causes of academic underachievement (e.g. Ladouceur & Armstrong, 1983).

The present study set out to investigate an even broader approach to improving academic achievement. Students were trained in what might appropriately be called generic problem-solving techniques: basic problem-solving operations which, in principle, should be applicable to any kind of problem. The training was not exclusively oriented toward the achievement of academic goals, and students certainly had no idea that their subsequent academic achievement was going to be monitored. By its very nature, though, the training was highly applicable to problems encountered in the pursuit of academic goals. One of the purposes of the study, therefore, was to assess whether the training had any appreciable impact upon the academic achievement of the group of students.

In the programme-development phase, the proposals put forward by D'Zurilla and Goldfried (1971) played an important role. Some changes and additions were made to their five stages of problem solving, however, with a view to increasing the applicability of the operations to personal problems. First of all, a problem was defined (from an individual's viewpoint) in terms of a discrepancy between an existing state of affairs and a desired state of affairs (cf. Reitman, 1964). This approach is useful for explaining the general nature and origins of problems and it provides a clear structure for all stages of problem analysis and resolution. Also, advantage was taken of the possibility of ordering desired outcomes hierarchically, as described above. The significance of this for problem solving is that sometimes it may be difficult or even impossible to bring about some specific state of affairs that figures in the definition of a problem, but still quite possible to bring about by a different route the hierarchically-related ends for which the first state of affairs was to have served as a means. Finally, account was taken of Ellis's (e.g. 1973) theory that:

> Emotional disturbance occurs when an individual *commands*, *insists*, and *dictates* that he *must* have his wishes or desires satisfied. Thus he *demands* that he succeed at important tasks and be approved by significant others; he *insists* that others treat him fairly and ethically; and he *commands* that the universe be more pleasant and less rough than it often is (p.181).

The significance of this for problem solving is that construing desired states of affairs in these terms can be self-defeating. As Ellis has amply demonstrated, the emotional reactions and patterns of behaving which may be generated in a person can make it less likely that the person will bring about some of the states of affairs that he or she desires.

As a basis for the programme-development phase, then, eight stages of problem solving were formulated: (a) recognizing a discrepancy, (b) explicating a discrepancy that is recognized, specifying in concrete terms the actual (or, the anticipated) and desired states of affairs so the difference between them is evident, (c) regarding the attainment of the specific state of affairs as being desirable, rather than as being imperative, (d) evaluating the desired state of affairs in terms of its probable effectiveness as a means for bringing about other desired states of affairs which relate hierarchically to it as ends do to means, (e) generating alternative strategies for bringing about the desired state(s) of affairs, (f) selecting the strategy which promises to be most effective, (g) implementing the selected strategy, and (h) assessing the effectiveness of the strategy, that is, the extent to which it brings about the desired state(s) of affairs. These stages were used to guide the organization of problem-solving procedures for the training programme.

It was hypothesized that the programme would increase the effectiveness of participants' problem-solving activities, and hence their level of academic achievement, and also increase their belief in internal control. In addition, since one of the procedures involved training participants to construe desired states of affairs in ways which obviated certain kinds of emotional reactions, it was hypothesized that the programme would increase participants' emotional stability. These predictions were tested in the programme-evaluation phase.

METHOD*

Evaluation design. Seventy-six male undergraduate students volunteered to participate in the programme, which was described as a course in individual problem solving and decision making, and of these sixty-four were subsequently used. The evaluation focused on the effects of the programme as a whole. To this end a version of the post-test-only control group design was used. The students were randomly assigned to a training group and a no-training group, and the training group (in sub-groups of eight) attended a series of five 90-minute training sessions held at intervals of one week.

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* Full details of the subjects, evaluation design, data analysis procedures and results have been given elsewhere (Duckworth, 1983). Copies of the materials that were distributed during the programme can be obtained from the British Lending Library at Boston Spa, Yorkshire, UK, as Supplementary Publication No. SUP 90068 (39 pages).

Training programme design. At the start of each session, a printed outline was provided, along with a detailed synopsis of the theory module and any other relevant material from the previous session. In Session 1 the nature and purposes of the programme were described, and then the trainer presented the first theory module, which was concerned with the concept of discrepancies. After a period for questions and discussion the first homework assignment was distributed. It gave participants instructions for generating and working on a list of current discrepancies from their own experience.

In Session 2, participants' experience with the first assignment was discussed and then the trainer presented the second theory module. This was concerned with the usefulness of regarding the attainment of specific states of affairs as being desirable rather than as being imperative. Following Ellis's (e.g. 1973) theory, the relation between modes of thinking and negative feelings was described, and it was shown how this helped to illuminate what was going on when a person experienced negative feelings in association with a discrepancy. After a period of questions and discussion the second homework assignment was distributed. The task was to choose a minimum of two discrepancies which had different negative feelings associated with them and use a *Scheme of questions* that was provided to probe and challenge the thinking implicitly underlying the feelings.

In Session 3, individual progress was reviewed and a longer period was spent dealing with any difficulties participants had experienced with the assignments, theories and techniques. Each person was invited to describe one of the cases he had worked on in the previous assignment and the ensuing discussion occupied the remainder of the session. Finally, the third homework assignment was distributed, which involved participants in reinforcing their skills by using the Scheme to probe three recent occasions when they had experienced negative feelings.

In Session 4, responses from the first three homework assignments were collected in so that some written feedback could be prepared for each person. Participants' experiences with the previous assignment were discussed, and then attention was turned to the next theory module. This consisted of an overview, with illustrative examples, of the principles embodied in a Guide for resolving problematic situations that was provided. After a period for questions and discussion the fourth homework assignment was distributed. The task was to list two problems and use the Guide to help resolve them.

In Session 5, written comments on their responses to the first three assignments were given to each person. Participants' experiences with the previous assignment were discussed in relation to the material in the Guide and then a sheet was distributed which reiterated the aims of the programme and summarized the three major theory modules.

Principal dependent variables and measures. Academic achievement was assessed by collecting data relating to the standard of bachelor's degrees gained by the subjects at the end of their schemes of study. As the subjects were at varying points in their degree schemes, data were collected during the three-year period after the programme. By the end of that time, all the original subjects had left the university permanently. The standard of the degrees was measured using the ordinal scale that is adopted by most

English universities. A student can be awarded an honours degree or an ordinary degree, or he can leave the university without a degree. There are five grades of honours degree: first class, upper second class, lower second class, third class and pass. The ordinary degree is a lower-calibre degree. Belief in internal control was measured using the Rotter I-E scale (Rotter, 1966) and emotional stability was measured with the neuroticism scale of the Eysenck Personality Inventory (Eysenck & Eysenck, 1964). Both scales were administered one week after, and then eight weeks after the programme.

RESULTS AND DISCUSSION

Specific hypotheses were developed which predicted the direction of difference between the two groups at the various testing points after the programme, and so one-tailed probabilities were used in conjunction with *a priori* statistical tests. The results from a normal approximation version of the Rank-Sum test for the degree results data showed that the training group had performed to a significantly higher standard than the control group ($z = 1.80$, $\underline{P} < .05$, $\tau_b = .21$). The degree results are given in Table 1.

Table 1. Frequency of bachelor's degrees of each standard across groups

Standard of degree	Training Group	No-training control group
Honours degree		
First class	2	0
Upper second class	10	0
Lower second class	10	8
Third class	7	8
Pass	3	3
Ordinary degree	0	3
No degree	0	2

There was evidence that the training group had developed a generalized expectancy of increased internal control. By the end of the programme they had a mean score of 8.75 compared with 12.03 for the control group ($t = 3.77$, $P < .0005$). Seven weeks later the mean for the training group had reverted by only .34 of a scale point.

The results also showed that the training group had become more emotionally stable. By the end of the programme they had a mean neuroticism score of 7.94 compared with 10.75 for the control group ($t = 5.30$, $P < .00001$). Seven weeks later the mean had further reduced to 6.97.

In general, the results of the training programme are encouraging. They suggest that a relatively short programme of this kind can increase the effectiveness of students' problem-solving activities, so they are more able to bring about some of the states of affairs they desire, including their academic goals. Further trials are now needed to provide for (a) an assessment of the effects of the programme on a wider array of problem-solving activities, (b) an examination of the precise ways in which participants' coping styles change and develop during and after it, and (c) an analysis and evaluation of which variables are critical in bringing about observed changes in participants.

REFERENCES

Carver, C.S. & Scheier, M.F. (1982). Control theory: A useful conceptual framework for personality-social, clinical, and health psychology. Psychological Bulletin, 92, 111-135.

Duckworth, D.H. (1983). Evaluation of a programme for increasing the effectiveness of personal problem-solving. British Journal of Psychology, 74, 119-127.

D'Zurilla, T. & Goldfield, M. (1971). Problem solving and behaviour modification. Journal of Abnormal Psychology, 78, 107-126.

Ellis, A. (1973). Rational-emotive therapy. In R. Corsini (ed.). Current psychotherapies. Illinois: Peacock.

Eysenck, H.J. & Eysenck, S.B.G. (1964). Manual of the Eysenck Personality Inventory. London: University of London Press.

Ladouceur, R. & Armstrong, J. (1983). Evaluation of a behavioural program for the improvement of grades among high school students. Journal of Counseling Psychology, 30, 100-103.

Miller, G.A., Galanter, E. & Pribram, K.H. (1960). Plans and the structure of behavior. New York: Holt, Rinehart & Winston.

Reitman, W.R. (1964). Heuristic decision procedures, open constraints, and the structure of ill-defined problems. In M. Shelley & G. Bryan (eds.), Human judgments and optimality. New York: Wiley.

Rotter, J.B. (1966). Generalized expectancies for internal versus external control of reinforcement. Psychological Monographs, 80(1, Whole No. 609).

Thompson, J.G., Griebstein, M.G. & Kuhlenschmidt, S.L. (1980). Effects of EMG biofeedback and relaxation training in the prevention of academic underachievement. Journal of Counseling Psychology, 27, 97-106.

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REFERENCES

Carver, C.S. & Scheier, M.F. (1982). Control theory: A useful conceptual framework for personality-social, clinical, and health psychology. *Psychological Bulletin*, *92*, 111-135.

Duckworth, D.H. (1983). Evaluation of a programme for increasing the effectiveness of personal problem-solving. *British Journal of Psychology*, *74*, 119-127.

D'Zurilla, T. & Goldfield, M. (1971). Problem solving and behaviour modification. *Journal of Abnormal Psychology*, *78*, 107-126.

Ellis, A. (1973). Rational-emotive therapy. In R. Corsini (ed.). *Current psychotherapies*. Illinois: Peacock.

Eysenck, H.J. & Eysenck, S.B.G. (1964). *Manual of the Eysenck Personality Inventory*. London: University of London Press.

Ladouceur, R. & Armstrong, J. (1983). Evaluation of a behavioural program for the improvement of grades among high school students. *Journal of Counseling Psychology*, 30, 100-103.

Miller, G.A., Galanter, E. & Pribram, K.H. (1960). *Plans and the structure of behavior*. New York: Holt, Rinehart & Winston.

Reitman, W.R. (1964). Heuristic decision procedures, open constraints, and the structure of ill-defined problems. In M. Shelley & G. Bryan (eds.), *Human judgments and optimality*. New York: Wiley.

Rotter, J.B. (1966). Generalized expectancies for internal versus external control of reinforcement. *Psychological Monographs*, 80(1, Whole No. 609).

Thompson, J.G., Griebstein, M.G. & Kuhlenschmidt, S.L. (1980). Effects of EMG biofeedback and relaxation training in the prevention of academic underachievement. *Journal of Counseling Psychology*, *27*, 97-106.

AN ALTERNATIVE APPROACH TO TEACHING ACADEMICALLY DISADVANTAGED COLLEGE FRESHMEN

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One of the problems high risk college freshmen have to contend with is their lack of experience in speculative thinking in the classroom. While this deficit may be evident at all levels of schooling, it becomes more obvious as students enter college. At this juncture freshmen are expected to express, develop and share ideas, yet their educational experiences have provided few opportunities for such endeavors. Thus, among the challenges teachers of academically deficient college freshmen face is how to engage students in speculative thinking.

Conventional approaches to addressing the needs of high risk freshmen have focused on the improvement of study skills. The plethora of recent college study skill texts attests to this phenomenon. While mastery of the basic skills of reading and writing is crucial to college success, it is suggested in this paper that through engagement in learning by toying with and developing ideas students master the challenge of a college education. Thus, we need to provide opportunities in the classroom and in the curriculum for students to express, develop and share ideas, critically and creatively, with logic and imagination. Indeed, the basic study skills may improve more effectively when the need for their use develops out of curriculum challenges.

Method

The course "College Learning and Thinking Skills" developed to address the needs of academically disadvantaged freshmen in the Student Tutorial Program (STP) at Montclair State College. The program includes approximately 100 students, sixty of whom were taught by the writer in four sections of fifteen students each. The curriculum serves the goals of the course which is to develop the skills necessary for college success, and it is guided by the view that the active engagement of students' cognitive processes is a necessary condition in learning (Dewey, 1902; Taba, 1962; Goodlad, 1983).

A common characteristic of academically deficient students is their reluctance to express their views owing to the concern that what they say is not the "right answer." The search for the so-called right answer may have done more harm in the classroom than is realized by teachers, by inhibiting students' risk-taking capabilities. Thus, in order for students to think critically and creatively, they need a safe environment in which speculation is valued. One aspect of the curriculum in the College Learning and Thinking Skills course which seemed to invite student engagement focused on the issue of moral dilemmas. This portion of the curriculum which developed from assigned text readings and related news articles has attributes that are suited to the needs of underachieving students. That is, since there is no single "right" answer to a moral dilemma (Kohlberg, 1975), its consideration frees students of the constraints of being right, while challenging them to think open-mindedly. It demands the exercise of logical reasoning as one is called upon to take a position and defend it, and invokes commitment and engagement as students usually feel strongly about a position they take.

The readings and related discussions served as a springboard for the activity which followed: the development and solutions of students' moral dilemmas. This turn in the curriculum occurred out of the possibility of maximizing the cognitive processes which had been set in motion by the readings and discussions. Since students were engaged in analyzing issues of ethical concern, it seemed that they could become more involved in this task if they were responsible for creating and solving moral dilemmas.

Moral dilemmas are usually considered in terms of those developed by Kohlberg. The use of moral dilemmas in classroom discussion is not new (Kohlberg, 1970; Blatt & Kohlberg, 1975; Maqsud, 1982), but it is not widespread. In fact, former New York City Schools Chancellor Macciarola recently decried the lack of such discussion in public schools (Maeroff, 1983). Having students create moral dilemmas in the College Learning and Thinking Skills course developed from an awareness that talk is central to thinking (Barnes, 1976) and clear thinking essential to clear writing (Britton, 1970). Thus, the curriculum activity of creating and solving moral dilemmas addresses analytic processes that are fundamental in college work.

Students worked in groups of three to four to develop a dilemma. Working in small groups allowed for greater verbal interaction than in a large group (Barnes, 1976; Taba, 1962) and had advantages over working individually. In small group settings students considered and evaluated each other's contributions and worked collaboratively on each other's ideas. Students were clearly engaged in the task; even those who rarely contributed to class discussions actively participated in creating the dilemmas. Through argument, persuasion and compromise, logical and creative abilities were exercised. Each group appointed a recorder to write the dilemma.

In the next phase, each group gave its dilemma to another group for solution. To continue the stimulation of cognitive conflict, critical and creative thinking, and collaboration, students were told that they had to agree on the disposition of the problem. It should be noted that Kohlberg's levels of moral development were not discussed and were not central to this activity. Students developed solutions and presented explanations of their positions without knowledge of Kohlberg's stages of moral development.

Evidence of student involvement was manifested when several students in each of the four sections suggested that the dilemmas be passed on to another group in the section for solution. This suggestion connoted an authenticity of involvement in that students were intellectually curious about how others would solve the same dilemma. While engagement alone is not sufficient to address the needs of academically disadvantaged students, it is a necessary component in their learning.

Discussion

It is no news that curriculum develops out of paying close attention to the needs and interests of students. What happened in this curriculum episode is that the needs of academically disadvantaged college freshmen were addressed somewhat differently from the more conventional approach to basic skill deficits. This approach interprets success in college as having the ability to express and develop ideas and to think speculatively. It recognizes that students need the stimulation that comes from challenge as well as the equanimity to take risks.

Moral dilemmas seemed to be an effective stimulus for speculative thinking because they provoked cognitive conflict yet demanded no single best solution. It was for this reason that they were used with academically disadvantaged college freshmen rather than as a means of developing students' moral sensibilities. It should be noted, however, that implications for such development exist if curriculum goals were adapted toward that end. Students could assess their solutions to moral dilemmas with respect to the stages of moral development described by Kohlberg.

There is little research on the development and solution of original dilemmas since moral development curriculum primarily utilizes Kohlberg's dilemmas. It is suggested that the development of original moral dilemmas as well as their solution is worthy of consideration in the curriculum of at-risk college freshmen.

Although this curriculum episode was confined to academically deficient college freshmen, it could be adapted for students with different academic backgrounds at other levels of schooling. As college writing programs have developed from the findings gleaned from teaching remedial students (Maeroff, 1984), so could adaptations be made from curriculum developed for at-risk college freshmen. We may not pay sufficient attention to the potential for adapting curriculum in one setting for use in others.

References

Barnes, D. From communication to curriculum. Harmondsworth, England: Penguin, 1976.

Blatt, M., & Kohlberg, L. The effects of classroom moral discussion upon children's level of moral judgment. In: D. Wright (Ed.), Journal of Moral Education, 1975, 4(2).

Britton, J. Language and learning. London: Allen Lane, 1970.

Dewey, J. The child and the curriculum. Chicago: University of Chicago Press, 1902.

Goodlad, J. A place called school. New York: McGraw-Hill, 1983.

Kohlberg, L. Moral stages as a basis for moral education. In: E. Sullivan and J. Rest (Eds.), Moral education. University of Toronto Press, 1970.

MacDonald, J.B. Application of a study of discourse in a laboratory school setting to university classrooms. Paper presented at the Ninth International Conference on Improving University Teaching, Dublin, Ireland, July, 1983.

Maeroff, G.I. Macciarola makes a call for values. New York Times, December 2, 1983, p. B3.

Maeroff, G.I. Teaching of writing gets a new push. New York Times, Winter Survey Education Section 12, January 8, 1984, p. 1.

Maqsud, M. Effects of Nigerian children's group discussion on their moral progression. In: M. Taylor (Ed.), Journal of Moral Education, 1982, 11(3), 181-187.

Taba, H. Curriculum development: Theory and practice. New York: Harcourt Brace, Javanovich, 1962.

IS SMALL BEAUTIFUL?

A STUDY OF COSTS AND QUALITY

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1.1 Background.

Until the academic year 1983/84 higher education in Sweden was affected relatively mildly by the current economic crisis in comparison with other parts of the Swedish public sector. Studies regarding the financial situation of universities and colleges have, therefore, been concerned mostly with methods of working out the costs per full time equivalent student and comparing costs per FTE in particular programs at one university with those at another. For obvious reasons, less attention has been paid to the pedagogical implications of any cost differences found.

A number of investigations seem to indicate that the amount of money allocated to a program is only one of many factors contributing to its quality (see e g Bowen 1980, Hoffman 1982, Kuh 1981, Meeth 1974). In the present study the questions of money and quality have been looked at from a slightly different angle, using educational results as our point of departure and attempting to relate them to other factors in order to try to find yet another aspect of the elusive notion of quality in education.

1.2 Scope of investigation.

Lund University, a large, three-hundred-year old university with a great number of older (over 25) students, and Växjö College, a small (c 3,000 students) young college in the southeast of the country, offer the same study program for future teachers of modern languages (English, French, German, and Swedish). Study results at Växjö, in terms of the percentage of students passing a given course within the program, are superior to those at Lund. These differences may be accounted for in several ways, and we have chosen to investigate four possible explanations:

1) differences in size of allocation. Lower allocations would yield poorer study results.

2) differences in initial proficiency. Those whose initial standards are poorer could be expected to be less successful.

3) the two institutions have different demands on their students. That more students pass could be an indication that standards are lower.

4) "environmental differences", e g size of college and department, continuity, involvement.

2. Study results

Based on the study program for teacher education in modern languages at the University of Lund and the College of Växjö, study results were measured as percentages of course beginners who completed those courses successfully. The material covers the years 1977/78 - 1980/81, and the figures correspond to the accumulated number of beginners during those years, as the number of beginners in any one year is too small to be used as the basis of statistical calculations. As a point of comparison we have included figures for students studying the same courses as electives - so-called "separate courses". Such courses are not part of a predefined study program, but may, in fact, be taken separately from any other courses, or, indeed, as the only course.

Table 1

Percentages of beginners in English, German, French and Swedish who have completed their courses successfully (note that in the Swedish system students study only one subject per term/semester).

1:1	English 2 semester course			
			(No. of beg.)	
	Växjö	Lund	Växjö	Lund
Study program	79%	31%	(42)	(48)
"Separate course"	45%	32%	(65)	(253)
1:2	German 1st semester course			
Study program	95%	61%	(22)	(28)
"Separate course"	60%	43%	(38)	(162)
1:3	French 1st semester course			
Study program	85%	64%	(13)	(22)
"Separate course"	53%	33%	(38)	(389)
1:4	Swedish 3 semester course			
Study program	73%	39%	(37)	(100)
"Separate course"	51%	31%	(69)	(156)

The figures are unambiguous: study results measured in these terms are better at Växjö than at Lund, and results are better for those studying within a program than for those studying the same course separately.

3. Resources

Our initial hypothesis was that differences in study results could be accounted for by differences in the allocation of money and, consequently, by differences in the volume of teaching. An examination of the resources allocated to the departments for the courses we investigated shows that although there is generally more money per FTE at Växjö College the discrepancy is not sufficient to explain the higher number of successfully completed courses.

Table 2. Allocation per FTE (SEK), budget 1981/82.

	Lund				Växjö			
	Engl.	Fr.	Ger.	Sw.	Engl.	Fr.	Ger.	Sw.
Study program	8.2	8.0	6.1	6.8	6.2	10.8	7.0	8.0
"Sep. cours-"	5.4	3.5	7.1	5.1	6.2	10.8	7.0	8.0

Historically, Lund University and Växjö College have very close connexions. Originally syllabuses and curricula were the same at the two universities. Today, 15 years after the creation of Växjö College, they remain very similar. The total number of teaching hours is largely the same in the courses investigated; group sizes are, at least nominally, the same, even if lectures which at Lund are attended by 200 students seldom attract more than about 40 at Växjö.

4. Students' initial standards.

A possible explanation of the lower rate of success of students at Lund might be that their proficiency at the beginning of their studies is lower. An examination of the minimum requirements for admission to the variants of the teacher education program in modern languages indicates that this hypothesis is not probable:

Table 3 Number of applicants and minimum requirements at Lund and Växjö, Fall 1980.

	Numbers				Points required for admission	
	Lund		Växjö		Lund	Växjö
	places	applic.	places	applic.		
Eng-Swe	5	80	4	13	5.0	4.9
			4	18		4.6
Fr-Eng	2	42	2	3	5.0	4.9
			1	3		5.0
Fr-Swe	2	16	2	3	5.0	4.4
			1	3		4.3
Ger-Eng	4	40	3	2	5.0	(4.8)
			2	10		5.0
Ger-Swe	2	12	2	3	4.8	4.5
			2	2		4.3
Ger-Fr	1	5	1	-	4.7	(4.6)
			1	4		4.6
	16	195	25	64		

Note: The group of students represented above are admitted primarily on the basis of their average results in their final year at high school. The maximum average is 5.0.

The tables show that in nearly all variants students admitted to Lund need better high school grades to be admitted.The difference varies between 0 and 0.6 points on the 5-point scale. The number of applicants per study place available is also considerably higher at Lund: The figure is 12 for Lund as opposed to 2.6 at Växjö. Thus this limited investigation does not seem to verify the hypothesis that beginners would be better equipped at Växjö than at Lund. However, in a more detailed study students' initial proficiency in the separate languages included in their study program must be accounted for as must other background factors such as the students' motivation and aims.

5.Quality of courses

In all the subjects investigated there is close cooperation between departments at Lund and departments at Växjö. In English the two institutions use the same language proficiency test, which is also marked according to the same principles. The two German departments use the same translation test and mark it in accordance with the same standards. In a few cases even the teachers are the same. Consequently, it may be assumed that those who pass these courses at Växjö have approximately the same language proficiency as those who are passed at Lund.

Another indicator is the final (fourth) year of the study program which students from Växjö and students from Lund do as teacher trainees with the same supervisors. An in-depth study comparing the proficiency of students from these two institution is being carried out during the current academic year. Preliminary interviews with teachers and supervisors for the students' final year already indicate, however, that students from one university are neither better nor worse than students from the other.Interviewees complain about students' oral proficiency, especially in German and French, but this is a general observation not related to the university the students have attended.

6."Environmental factors"

If students at Lund and Växjö are approximately equal as far as the factors examined above are concerned, other factors must be sought to explain the notable differences in study results.

Several researchers have investigated the economic advantages of scale. In the early 1970s the OECD launched a major research project on this theme (see e g CERI 1972). Today a number of scholars (e g Bowen 1980 and Meeth 1974) point to the larger overall gains that may be made in smaller institutions in the long run. In his survey of quality criteria in American colleges Kuh (1981) concludes that the quality of higher education is a function of

- the size of the college. It should be neither too large nor too small
- continuity in study programs
- the involvement and efforts of teachers and students at a college or in a study program geared at creativity and renewal
- clear objectives

We furthermore maintain that none of these functions alone can be an expression of quality.

These arguments might be brought to bear on our discussion of study results at Växjö and Lund.

Size

The two institutions are very different as regards size. The departments included in this study have 750 FTEs per year at Lund and 225 at Växjö. We might then venture the hypothesis that the functions of quality and study results could be related to the size of the institution or program and that they would be favored in a smaller organization. Interviews with those responsible for the teacher education programs at Växjö and an examination of study conditions at the two institutions indicate that such relationships might exist.

Continuity in studies

During the years investigated the organization of teacher education at the two institutions has been fairly loose. Students following study programs and students pursuing "separate courses" have been taught in the same groups and they have been allowed to study the subjects included in the program in whatever order they have chosen. However, it has been easier for students at Växjö to keep each other informed as to the progress of groups and individual students not only within each department but also from one department to another. At Växjö, too, there is a special study counselor for each study program who is charged with the specific task of continually following the students' results and contacting those who seem to be on their way to drop out. Consequently there seems to exist at this institution a system of social control exerted by students on their fellow students, and by teachers and administrators upon their students.

Since the fall of 1982 subjects within study programs have to be studied in a prescribed order, which means that it is now possible to create progression and continuity within the programs. It has not yet been possible to evaluate the results of this change.

Involvement and homogeneity

University teachers are engaged in teaching and research. In order for them to be successful at either it is essential that they be involved in both. Now, it is natural that the larger institution has research facilities which are not available at the smaller one, and that therefore the quality of the teaching at the smaller institution may be lower. That research may become a natural ingredient of teaching at a smaller university is shown, though, by the fact that at Växjö a major project is being carried out which involves the departments of Swedish and English and which has given rise to a great number of papers produced by teachers and undergraduates.

Interviews also indicate that involvement might correlate with homogeneity of the student group and that groups are more homogeneous at Växjö than at Lund, in terms of e g age. In 1981 the average age of Växjö students within the teacher education program was 25 as opposed to 30 at Lund. 80 percent of students at Växjö in 1980 were 24 years of age or younger whereas at Lund the corresponding figure was 35 percent. Students at Växjö have consequently not had time to form families, have not got so many outside interests and mostly associate with their fellow students.

At Lund a larger proportion of students have a part-time job parallel to their studies. There are also far greater opportunities to join various associations and organizations and, consequently, to get involved in activities other than studies. This environment, then, seems to contribute to the slowing down of the pace of studying and the increase of the dropout rate. On the other hand, it is possible that these greater opportunities help to develop other qualities in students.

7. Conclusion

The present investigation seems to indicate that there may be advantages found at a small institution which contribute to a greater proportion of successfully completed studies and that economic resources are only one of several factors that will help to maintain satisfactory quality at a college or university. However, the results are as yet preliminary and there are, of course, also other variables that might be examined. To find out the students' actual starting level in the various subjects it would be necessary, for example, to use standardized initial diagnostic tests. Study results might be examined in terms of the time it takes for students at the two institutions to finish their studies in the various subjects. Very preliminary calculations seem to indicate that there is no great difference for those students at the two universities who complete their studies. If this is so, the main difference between them is in the dropout rate.

Finally, it of course quite possible, and, if one is to judge by the results of the present study, desirable to create within the larger institution such favorable conditions as may be found in the smaller institution and thus to combine the best of both worlds. Successful projects have been conducted e g at the English department at Lund University aiming at trying to form homogeneous student groups in terms of age (18 - 25), residential area (living in or near the town of Lund), time devoted to studies (no jobs). Furthermore, those participating in the experiment were divided up into groups according to the results of a diagnostic pretest. The students in these experimental groups, particularly those with lower results on the pretest, did markedly better than students in the corresponding control groups.

REFERENCES

Bowen, Harold, R (1980) The Costs of Higher Education. San Fancisco: Jossey-Bass Publishers.

CERI (1972), Costs and Potential Economies. Studies in Institutional Management in Higher Education. University of Bradford. OECD.

Hoffman, James (1982), The Role of Accreditation in Preserving Educational Integrity, in Educational Record, Summer 1982.

Kuh, George (1981), Indices of Quality in the Undergraduate Experience. AAHE-ERIC/Higher Education Report no 4. Washington D.C.: American Association for Higher Education.

Meeth, Richard, L (1974), Quality Education for Less Money. San Francisco: Jossey-Bass Publishers.

LISTENING COMPREHENSION: A KEY TO IMPROVING THE LEARNING PROCESS IN COLLEGES AND UNIVERSITIES

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Americans spend a great deal of time as listeners. The classic study that demonstrates just how much time we do listen was conducted by Paul Rankin, who discovered that adults spend 42.1 percent of their communication time in listening in contrast with 31.9 percent in speaking, 15 percent in reading, and 11 percent in writing.[1] Other researchers[2] have investigated the amount of time that people spend listening, confirming the proportions that Rankin observed in 1929.

The amount of time that we spend listening is increased today by the amount of time that individuals spend attending to radio and television. Young people today probably have spent over 20,000 hours before television sets -- over 7000 hours more than they have spent in school from kindergarten through twelfth grade.[3] The Neilsen service estimates that male teens spend an average of 23 hours and 40 minutes per week in front of the TV set, while female teens average 21 hours and 20 minutes a week. Neilsen estimates that 83.3 million (or 98 percent) of all American households own at least one television set.[4] Arbitron Ratings Company suggests that there are over 9100 radio stations on the air today, and 95 percent of all Americans age 12 and over listen to the radio an average of 22 hours per week.[5] Indeed, we have become a listening society.

This emphasis on listening results from what John Naisbitt, the futurist, describes as a shift in American society from an industrial society to an information society.[6] Media specialist Tony Schwartz argues that this shift of Americans into a post-literate society has been structured largely by the advances in electronic media. Americans share vast amounts of information and knowledge because we are all exposed to that information while spending so much time attending to radio and television.[7]

The prominence of listening in American society is reflected in the corporate interest in improving listening skills. Leading this movement is the Sperry Corporation which launched an advertising campaign on the theme, "We Understand How Important It Is to Listen," complete with print ads, television commercials, and a listening profile booklet for interested consumers. Sperry has backed up this program with an extensive training program to improve the listening skills of their executives, managers and employees.[8]

Clearly, listening plays a major role in the lives of Americans, and it certainly is central to the lives of college students. This point led one educator recently to conclude that "the heart of the teaching transaction is skilled oral communications. Teachers must consistently practice them and encourage the practice of them by their students. The good teacher is both a good speaker and a good listener. The latter may, indeed, be more important than the former."[9]

Recognizing the centrality of listening to the learning process, the Carnegie Foundation for the Advancement of Teaching has issued a call for including listening in the secondary school curriculum.: "Listening should be included, too. Today's young people are bombarded by messages. They should be taught to evaluate what they hear, to understand how ideas can be clarified or distorted, and to explore how the accuracy and reliability of an oral message can be tested."[10]

Several researchers have demonstrated how much time college students spend as listeners. Taylor reports research estimating that "close to 90 percent of the class time in high schools and colleges is spent in listening to discussions and lectures."[11] Bird determined that college women spend 42 percent of their daily communication time listening, revealing that 82 percent of the subjects in this study considered listening to be equal to or even more important than reading as a means for learning at the college level.[12] Conaway recently discovered that listening comprehension is a critical factor in the attrition and the retention of college students: "Among the students who fail, deficient listening skills were a stronger factor than reading skills or academic aptitude."[13]

Despite the prominence of listening in the learning process of college students, it is interesting to observe that very few institutions offer direct listening training for their students. Markgraf found only three institutions in 1962 which offered specialized courses in listening, while 134 of the responding schools did offer listening as a special unit in another -- usually speech communication -- course.[14] A 1978 survey of nearly 600 colleges and universities demonstrated that listening is one of the twenty topics covered in basic speech communication courses.[15] Yet another study of 70 institutions of higher education revealed that only 14 percent offer courses in listening.[16] As educators, we have assumed listening skills on the part of our students and consequently have not really dealt with providing students with this important learning tool.

Just how important listening is as a tool in the learning process can be illustrated. In an effort to determine student perceptions of the role of listening in their college careers, I asked the 42 students entering my course in Listening in the spring, 1984, semester to complete a short open-ended questionnaire about their perceptions. The questionnaire was administered at the very beginning of the course, before students even had filled out student information cards, so that they would not have any "conditioning" about listening. I felt that this population would represent a good profile of students who are concerned about listening as students (thus, they have enrolled in a course in the subject), students who represent a broad spectrum of juniors and seniors (who thus have a good understanding of their study skill needs as students) from all sorts of curricula at the university -- engineering, textiles, computer science, humanities, communication, agriculture, business, education -- and from all age groups, including some returning senior citizens. The results were revealing.

Students did perceive listening to be the most important study skill. They were asked to rank order the importance of study skills to their success as a college student. Seventeen (40% of the 42 respondents) ranked listening as most important. Twelve students each (29%) ranked reading and ranked time management as most important. Only five students ranked writing as most important, while three perceived memory development to be the most important to them. Two students saw notetaking as most important to them, but only one student ranked computer skills as most important.

In addition to ranking the importance of study skills, students were asked an open-ended question to identify what it is they primarily attend to as listeners. Thirty-five of the students (83%) identified lectures as their primary listening as students. Another ten students mentioned listening to the radio (24%), while only eight (19%) listed television. Eight students also listed listening to friends.

Students then were asked to enumerate their strengths and weaknesses as college student listeners. Students perceived their strengths to be the ability to observe and/or to be sensitive to what the speaker was communicating (seven students, 17%), while another six (14%) identified their ability to pick out main points as a strength. Twenty-six of the students (62%), however, identified concentration as their greatest weakness as listeners. Another eight (19%) suggested that their lack of patience (typically manifested by the tendency to interrupt speakers) was a serious listening weakness.

When asked, then, what they might do to improve their listening abilities, twenty six of these students (62%) suggested that learning the skills of concentration would be most helpful to them in improving. Another five students (12%) did identify the need to develop greater patience as listeners. Other suggestions were to maintain eye contact with speakers, ask meaningful questions, know the subject matter, develop greater understanding, and practice.

The final segment of the short questionnaire called for students to identify what could be done to improve students--and professors--as listeners. Most of the students suggested courses, workshops, seminars, and other forms of direct training for improving listening abilities in our institutions of higher education.

This profile of student perceptions of the role of listening in higher education offers important implications to us as educators. Efforts to improve the educational process should start with efforts to improve student-professor interactions. Ironically, most of these efforts have focused on communication skills of the source of the communication. Probaby any training in oral communication for most individuals has been in speaking skills--skills in how to organize, develop, and present lectures and speeches. Little if any attention has been paid to that which we do most in education--listen.

It would seem, therefore, that the development of improved listening skills for our students--and for ourselves--to be a most beneficial effort to improving the learning process itself. But just how can such skill development be accomplished?

The goals for building a listening curriculum should include the preparation of students to: (1) understand the process of listening as that of receiving, attending, and assigning meaning to a message; (2) recognize the role of the listener in the process of communication, assuming at least 50% of the responsibility for the communication; and (3) equip students with strategies for improving their own listening behavior, particularly as comprehensive listeners.

To accomplish these goals, educators must make choices as to where to best provide the listening instruction and, likewise, how best to deliver that instruction.[17] Listening can be presented as part of a basic speech communication course (the most typical approach) or as part of a non-credit study skills sequence for entering students. Training in listening might be coupled with reading comprehension or offered through a separate academic course on learning behaviors. Choices also must be made as to the most effective format for presenting this instruction: as a unit in a basic speech or study skills course; as a course in itself; as individualized tutorial instruction; as programmed instruction utilizing one of the commercially-available packages or one designed by the institution.[18]

Whatever the format, it would appear that meaningful skill development requires that students receive a number of experiences to increase their listening comprehension. The more systematic practice the students receive to develop specific skills, the more proficient they should become as comprehensive listeners. A good listening program ought to include the opportunity to practice effective skills in actual lecture situations and ought to provide assessment of the skills acquisition of the students. An important key to the development of listening skills is motivation, so we must help students to get involved in their own listening behaviors and to strive for improvement and commitment to the listening process.

Just as students should be motivated to become effective listeners, we as educators ought to consider the importance of good listening skills for ourselves. The classroom teacher who is a good listener is providing a strong model of listening behaviors for students. Students respect and appreciate professors who take the time to listen to them, and such efforts can result in a true communication interchange in the learning process. Friedman describes this learning process:

> "When students enter a classroom for the first time, they look to the teacher and wait for the messages that will tell them what to expect. Simultaneously, the teacher is sizing them up. Each is alert, attentive, listening. From that moment on, they will spend most of their time together trying to gain and hold each other's attention, striving to understand and be understood, determining where they stand with each other, silently judging and evaluating--in short they will be concerned with listening."[19]

This concern with listening should be a priority for students and for professors alike. Together we can share the responsibility for strengthening the learning process in our institutions of higher education.

NOTES

1. Paul T. Rankin, "Listening Ability: Its Importance, Measurement, and Development," Chicago Schools Journal, 12 (January 1930), pp. 177-179.
2. Elyse K. Werner, "A Study of Communication Time," (Unpublished M.A. Thesis, University of Maryland-College Park, 1975). J.D. Weinrauch and J.R. Swanda, Jr., "Examining the Significance of Listening: An Exploratory Study of Contemporary Management," Journal of Business Communication, 13 (Spring 1975), pp. 25-32.
3. Research summarized in Andrew D. Wolvin and Carolyn Gwynn Coakley, Listening (Dubuque, Iowa: William C. Brown Company, 1982), ch. 1.
4. 1983 Nielsen Report on Television (New York: A. C. Nielsen Company, 1983)
5. Radio Today, Arbitron Ratings Company (Beltsville, Maryland, 1982).
6. John Naisbitt, Megatrends (New York: Warner Books, 1982).
7. Tony Schwartz, Media The Second God (New York: Random House, 1981), pp. 14-15.
8. This program is described in Lyman K. Steil, "On Listening. . .And Not Listening," Executive Health, 18 (December 1981).
9. Donald N. Dedmon, "Education: Confirming What We Know," speech presented to Radford University Faculty Convocation September 6, 1983, reprinted in Vital Speeches, 50 (October 15, 1983), p. 19.
10. Ernest L. Boyer, High School (New York: Harper and Row, 1983), pp. 92-93.
11. Stanford E. Taylor, Listening (Washington, D.C.: National Education Association, 1964), p. 3.
12. Donald E. Bird, "Teaching Listening Comprehension," Journal of Communication, 3 (November 1953), pp. 127-128.

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13. Margaret Conaway, "Listening: Learning Tool and Retention Agent," in A.S. Algier and K.W. Algier, eds., Improving Reading and Study Skills (San Francisco: Jossey-Bass, 1982), p. 57.

14. Bruce Markgraf, "An Observation Study Determining the Amount of Time That Students in the Tenth and Twelfth Grades Are Expected to Listen in the Classroom," in Listening: Readings, ed. Sam Duker (New York: Scarecrow Press, 1966), pp. 90-94.

15. James W. Gibson, et al. "The Basic Course in Speech in U.S. Colleges and Universities III," Communication Education 29 (January 1980), pp. 1-10.

16. Florence I. Wolff, "A 1977 Survey: General Insights Into the Status of Listening Course Offerings in Selected Colleges and Universities," North Carolina Journal of Speech Communication, 12 (Winter 1979), pp. 44-52.

17. This curriculum is reviewed in Andrew D. Wolvin, "Improving Listening Skills," in R.B. Rubin, ed. Improving Speaking and Listening Skills (San Francisco: Jossey-Bass, 1983), pp. 13-24.

18. See, for example, Tom Cottrill and Robert T. Alciatore, "A Comparison of Two Methods of Teaching Listening Comprehension to College Freshman," Western Speech, 38 (Spring 1974), pp. 117-123.

19. Paul G. Friedman, Listening Processes: Attention, Understanding, Evaluation (Washington, D.C.: National Education Association, 1978), p. 4.

Improving University Teaching

III

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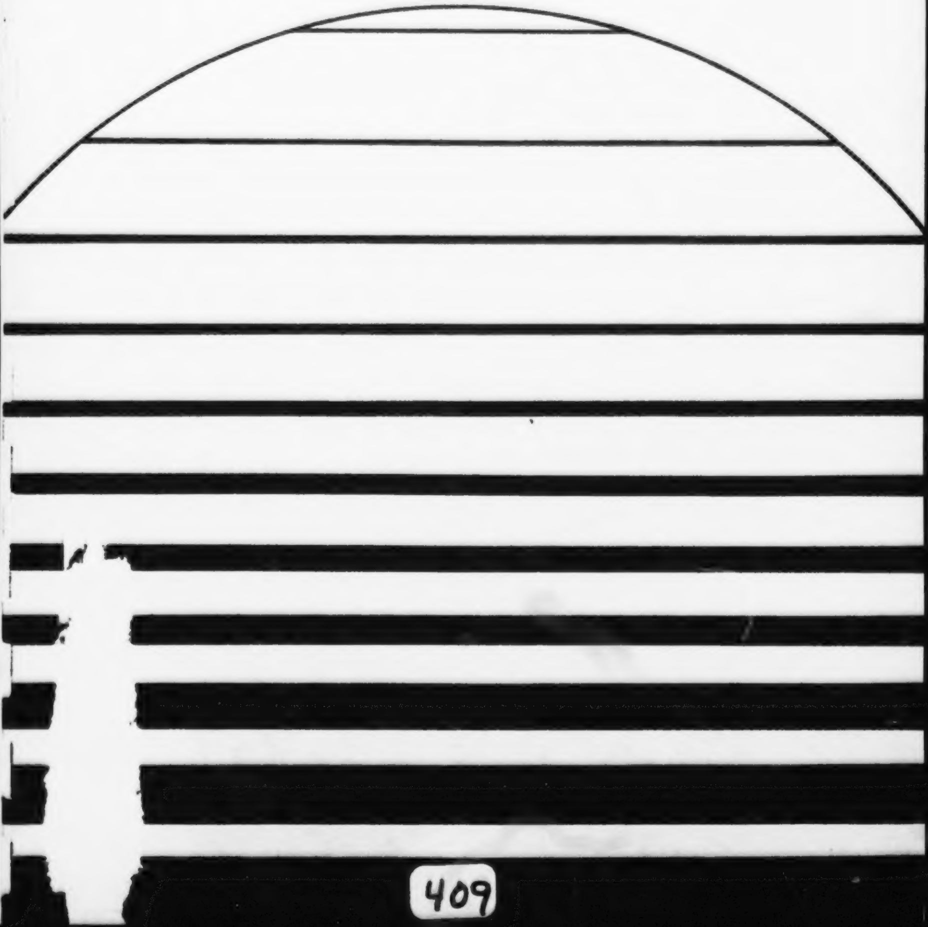

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DEVELOPING FACULTY AS TEACHERS I

FRIDAY, 6 JULY

1430 - 1600

FACULTY DEVELOPMENT IN ARAB UNIVERSITIES

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1. Introduction: The tradition in most of the well established universities all over the world is to view a staff member at a university as primarily a researcher (2;88). The advancement of knowledge and its development in his field of specialization are among his major responsibilities (5:37-40). Usually, the quality of his research together with his academic reputation are taken as the main criterion against which his appointment, tenure, and promotion are evaluated. Most, if not all universities, being aware of the central importance of this factor in the total make up of a university staff member, tend to stress research abilities and academic excellence among their graduate students. Very few universities in the world offer courses geared towards the training of teachers in the mechanics of teaching. University teachers who miss the opportunity of being trained in the art of teaching usually operate a strategy of trial and error in finding out the proper way of communicating with their students (4:35). This is the sort of thing that led some educators like kilpatrick and Jones (2:89) to call for the foundation of two Ph.D. programs at

universities, one for those heading for research posts, and the other for those who are likely to become university teachers.But this call is not taken into consideration in most universities, and therefore most of the Ph.D. graduates who join the teaching profession at a university find difficulty in communicating with their students. This frequently gives rise to complaints from one university to another such as" undue reliance on lectures, often delivered with too little consideration of the needs and capacities of the audience, and insufficient personal contact".(3:168).

Some specialists , as a response to the undue emphasis given to research as compared to teaching, stressed that "teaching and research are not opposing each other, and that they do not exist at extreme points" (3:182). They went on to add that "teaching is not really a patient recapitulation and explanation of the known, and that research is not a solitary voyage to discover something that will be intelligible to a more handful of persons" (3:182). They stress that "there is no borderline between teaching and research, and that they are complementary and overlapping activities. A teacher who is advancing the general knowledge of his subjects is both improving himself as a teacher and laying foundations for his research" (3:182). But, inspite of all of these complaints and remarks, one could say that very little is done to train potential university teachers, and that this training, little if it exists at all, does not go beyond working in a teaching assistantship post, teaching on a part-time basis in secondary schools, or in the junior years at a university, either before entering the graduate program or in conjunction with it .(8:80-82) , (2:60-68).

2. Concerning universities in the Arab world, one could say that they are largely the creation of the present century, and that the majority of them were founded in the last two decades. (1: 10 - 14). Therefore these universities are brand new, and are still in the process of building up their own traditions . These universities were founded in succession, during a short period of time, which created a great need for teaching staff to facilitate their running . Since the required number of teaching staff was and probably still not available at the local or regional levels, these universities could hardly be selective in the recruitment of their staff. In the light of this urgent need for teaching staff in most of thse universities, it has proved difficult to turn down any applicant with a Ph.D. degree or its equivalent, the qualification which is required as a basic need for appointment in teaching posts in most of these universities as is the case in universities in developed countries (5:33). Since the

majority of these new recruits have had no teaching experience and have entered teaching posts straight from experience as graduate students, it is hardly surprising that they haven't encountered difficulties in handling their teaching responsibilities, especially when they have rather large sized classes, and no teaching aids to assist them. It is true that university teaching has no single pattern to be adopted, because it has to do with mature students who are supposed to be self-learners (5:191), but still the efficency of a university teacher in guiding the learning of his students is especially in helping students make the necessary adjustment from being a taught school student to being an independent student in higher education. The teacher therefore has to be trained in the appropriate methods and means of teaching his students and guiding their learning (7:158), (9,3), (5: 37-40). To meet the probable deficiencies in the teaching abilities of these new recruits, a few universities in the region, among which is the university of Jordan proposed various measures to ensure the proper selection and training of potential teachers, together with these newly recruited from among Ph.D. graduates. These measures could be summarized as follows; and they are mostly applicable to the University of Jordan, which is taken as the central theme of this case study.

3.1 Some departments or faculties in these universities used the appointment of graduate assistants to meet their needs for teaching staff. These graduate assistants are usually graduate students with a B.A. or an M.A., and are chosen on the basis of their academic excellence and personal qualities . After being selected, they are usually attached to experienced staff members, and are normally entrusted with a few responsibilities related to the teaching processes. These responsibilities include helping in preparing lectures, supervising practical classes, taking care of tutorials, marking examination papers, leading seminars, and the like (1: 32 - 33). It is assumed that through the process of careful selection, and through this kind of apprenticeship these graduate assistants in a period of 2-3 years will be accustomed to the duties of a university teacher. After they show competence in teaching and in research, these graduate assistants are then sent abroad to obtain a Ph.D. degree in their field of specialization. Usually the university to which they are sent, and the program of their study are decided by their home university. Sometimes, these graduate assistants are enrolled in an M.A. program at their home university, if such a program exists. Some faculties which have Ph.D. programs usually try to screen their top students and give them scholarships or financial assistance so as to encourage them to join the teaching staff in these faculties. This measure usually applies to faculties of education, economics, commerce, law, and the like. This in particularly the case in the older universities such as Cairo and Damascus.

3.2 As for the new recruits from among Ph.D. holders who are appointed as teaching staff in the various faculties, they usually have different backgrounds due to the differnces among their graduating universities on the one hand, and differences in their backgrounds and experiences, on the other. Usually these new recruits are appointed at least one month ahead of the semester so as to become oviented to their department, concerning its policies, traditions, regulations, and requirements. In this short period of time, the concerned departments usually hold seminars, meetings, and workshops for the exchange of knowledge and experience. The old and new teaching staff meet together to discuss matters related to teaching, among which are: preparation of course outlines, specifying course objectives, setting references and reading lists, and deciding on examinations with regard to their number, quality, and timing. If the same course is being taught by more than one member of staff, then they are required to share the some course outline, coordinate their teaching, and give the same tests. This has proved to be of great help to new recruits, who are usually given the opportunity to share the teaching of a course with an experienced teacher, or to teach one of the different sections of a given course with other colleagues.

3.3 New recruits are usually given a reasonably light load of courses to teach during the first year of their teaching career. This measure is supposed to give them enough time for the preparation of lectures, marking their exam paper, preparing audio - visual material, taking part in seminars and workshops, interaction with senior staff members, socializing with their students, and the like.

3.4 Considerable pressure is put on every staff member to improve the quality of his or her teaching. When considering his tenure or promotion, the quality of his teaching as evauated by his colleagues and students is taken to be of prime importance. The chairman of his department and the dean of his faculty are required to report on that, and they are entitled to visit some of his classes to evaluate that matter. This, no doubt, makes a staff member always conscientious, and generates in him an internal motivation to improve the quality and procedures of his teaching. This process of evaluation is usually carried out in a friendly atmosphere, and staff members consider it to be healthy and necessary as a feedback process.

3.5 At the University of Jordan, which is considered to be pioneering in our part of the world, the administration formed a starding committee for the improvement of teaching. This committee carried out several activities related to the improvement of the teaching process at the university. These activities include holding seminars, workshops, and panels to discuss problems and issues related to giving tests, grading them, teacher evaluation by students, use of modern technology in teaching, and similar things so as to identify appropriate solutions.

3.6 The University of Jordan initiated a technological center to serve teachers in the various faculties. This center is now in the process of creation, and will contain teaching materials and teaching aids that may be of any help to any staff member, irrespective of his specialty. In addition, the center is planning to video - tape lectures of well experienced teachers to be shown to interested students and staff members. It is hoped that these lecturer will serve as a model for successful teaching. These vides - taped lectures will cover the content of complete courses, and they will be mainly concerned with university and faculty requirements.

In addition to the initiation at this central technological center at the university level, the faculty of medicine has also initiated a training center for the teachers of that faculty to introduce them to the art and techniques of teaching. The center is one year old, and it proved to be successful in attracting staff members of that faculty to join in seminars and workshops which are directed to the improvement of medical teaching and the utilization of advanced technological aids in teaching.

3.7 In addition to the academic preparation of the graduate assistants in their own departments (being enrolled in academic programs leading to a deplome or and M.A. degree). The University authorities, in collaboration with the Faculty of Education , initiated a diploma program in education, which was specially tailored to suit the teaching needs of all graduate assistants in the various faculties. It is hoped that this program which consists of 33 credit - hours of graduate courses in education, will be of great use in the training of the new recruits .

The main feature of the program concentrate on the mechanics of teaching at the university level.

3.8 The University of Jordan authorities encourage faculty members to attend seminars and conferences, especially those related to the teaching process, either inside or outside the country. More than fifth of staff attend conferences every years. It is the tradition that any one who attends a conference is to write a report on the proceedings of that conference, so that this report can be distributed to all those concerned. In addition, the attender has to give a lecture summarizing the main issues and ideas that were covered in the conference for members of his department of his faculty.

3.9 The University authorities encourage teaching staff of the various faculties to join training programs in outside universities or institutes of higher education. These programs are usually concerned with training in teaching, research, or the use and preparation of technological media. It is usually left to the faculty or even to the individual department to decide on the kind of training wanted in the light of their needs. Usually trainces of this sort are sent to universities of great reputation where they can benifit from a team of experienced practising staff members.

4. *Conclusion*: It is hoped that the various programs adopted by the university of Jordan for the training of of faculty members on the mechanics of teaching, and the several measures adopted to help the new recruits to become better teachers will lead to more effective teaching and learning. It is believed that there is still enough room for more improvements and modifications on the presently adopted measures. These include strengthening the functions and roles of workshops, the proper utilization of team teaching approaches, the initiation of efficient pedagogical programs, and the increase of academic and professional interaction within the individual faculty and between faculties. All of these will be of great help to those concerned with the teaching process at a university level, and it will promote the proper interaction between students and their lecturers.

References

1. King Saud University, *Proceedings*:Seminar On University Staff-members In Arab Universities. 1983.
2. Berelson, Bernard. *Graduate Education in The United States*. New York: McGraw-Hill Book Co.1960.
3. Brown, James&Thornton,James. *College Teaching:Perspectives and Guide Lines*. New York: McGraw-Hill Book Co., 1963.
5. Dennis,Lawrence & Kauffman, Joseph (editors). *The College and the Student*. Washington, D. C; American Council on Education. 1966.
4. Committee on Higher Education,*Higher Education*; Report, London: Her Majesty's Stationary Office, 1968.
6. Flexner, Abraham.*Universities*. London:Oxford University Press,1968.
7. Heywood, John. *Assessment in Higher Education*. New York: John Wiley& Sons, 1978.
8. Lee, Calvin, (ed.), *Improving College Teaching*. Washington, D.C.; American Council on Education, 1967.
9. Mood, Alexander. *The Future of Higher Education*: New York: McGraw-Hill Book Co., 1973.

Five Year Follow-Up on Needs and Means for University Teaching Improvement: Canadian Survey IV

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This paper reports on the latest survey of Canadian university teachers' ranked needs to improve their teaching, and the means to meet these needs. Since this survey is the fourth in a series the stability of needs and means over a period of five years, trends, and the sensitivity of the instrument are discussed.

METHOD

Past Surveys

The first survey (Nelson, Foster, & Rattan, 1979) was of 480 members of the American Educational Research Association (A.E.R.A.) with Canadian addresses. It tapped background variables and expressed needs for teaching improvement. The second survey was sent to 265 teachers and assistants in the Faculty of Education of The University of British Columbia. It contained a slightly revised needs list, and a list of 8 means for effecting teaching improvement items adapted from earlier work of Centra (1976). A third survey, identical to the second, was sent to 240 members of the Canadian Educational Research Association (C.E.R.A.) who were not including the first two. Stamped return envelopes were included and no follow-up requests were made. Response rates for the three 1978 surveys were 20%, 42% and 22% respectively (Foster & Nelson, 1980).

Survey IV

Modifications were made in the needs section of Survey IV. Five needs were deleted for consistent middle to low priority ratings., Five items were added or modified to test concerns not previously tapped but suggested by prior respondents or others (see Table 1, items 2, 4, 6, 7, and 8 in Survey IV). The Means section was unchanged. The revised survey was mailed early in 1983 to 300 members of C.E.R.A. And A.E.R.A. At 18 universities in nine provinces. Responses were generally anonymous obviating follow-up requests or cross checks to determine degree of overlap with respondents of the 1978 surveys.

Results and Discussion

Needs Section Table 1 summarizes the needs rankings of 114 respondents (38% return). Although five years ago "discussion techniques" was highest ranked in all three Surveys, it was 3rd in Survey IV. The highest ranked item in Survey IV was "evaluation of student performance" which had middle to low rankings in Surveys I (rank 3), II (rank 4.5), and III (rank 6). This rise in evaluation as a priority for improvement suggests (1) a growing concern over grading possibly have been perceived as having become too lenient and/or (2) financial restraint and enrolment restrictions such that "evaluation" gained in perceived importance (with increased competition for class places).

Of the two new items about classroom questions "Asking worthwhile questions" was ranked 2nd and "Handling questions from students" was 6th. These results considered with the 3rd ranked need, "to facilitate discussions", suggest instructors may be saying that a way to learn to facilitate discussion is to improve in asking questions. Instructors may feel more confident in answering than in posing questions. The need ranked last was "self control" (i.e., anxiety).

Means Section

Table 2 summarizes rankings for teaching improvement means. Whereas in prior surveys "holding workshops" was the highest priority, in Survey IV it was ranked 2nd, replaced by "providing funds for teaching". This trend in elevating financial concerns is seen in comparison with Surveys II and III where "funds" was ranked 4th and 3rd respectively. Instructors, aware of financial troubles, maybe saying that teaching quality suffers as funds are reduced or eliminated.

With this in mind, one might item #3 ("Weight teaching more heavily in personnel decisions"). This "reward" item suggests improving one's status though promotion, tenure or merit pay. The ranking of item #3 has softened across the surveys, Survey II (rank 3), Survey III (rank 4), Survey IV (rank 5) reflecting perhaps the lack of confidence in our ability to evaluate instruction comprehensively.

"Holding workshops" and "providing for more team teaching or observation of teaching" remain highly ranked means to improvement. Also, "circulating a newsletter" increased in rank over the five years (From 6 and 5, to 4 respectively) suggesting a desire to receive or share information in this more impersonal form. The lowest ranked means are "Master teacher awards" and "Nothing beyond what is already done". Teachers are possibly saying that (1) rewards should be more tangible than a certificate, and (2) there _is_ a need for _something_ to be done to help improve teaching quality.

Background Variables and Rated Needs and Means

In past surveys as in Survey IV, all statistically significant correlationsbetween demographic variables and needs and means are low to moderate, therefore, only current data are summarized on Table 3.

Age. Age categories were (number responding in parenthesis): 21-30 (1), 31-40 (32), 41-50 (41), 52+ (36). Older instructors tended to want to improve "small group discussion" techniques. Perhaps their pedagological style has been oriented to lectures, the dominant form of teaching in Canada (Sheffield, 1974). Trends today, emphasize participatory forms of learning, as advocated in the Club of Rome report (cf, Foster, 1981, 1982). Older teachers also tend to prefer a newsletter as a means to improvement.

Gender. There were 22 females and 90 males in this analysis. Female teachers as in earlier surveys indicated a higher need for improving "evaluation and grading". Females also were more strongly opposed to the item that "nothing should be done to improve teaching".

Highest Degree. Since the numbers in the categories (0 bachelors degree level, 5 at the masters level, and 107 holding the doctorate) are so disparate the correlations should be considered unstable.

Years Teaching. The range reported was 4 to 29 years, with a mean (and median) of 14.3, and a standard deviation of 5.8 years. The need to "supervise individual projects" was associated with length of time in teaching. Perhaps the longer one teaches, the more this aspect of teaching is appreciated. "Need to learn more self control" (e.g., anxiety, etc.) was associated with less teaching experience, suggesting that beginning teachers worry more about their classroom adequacy than do the more experienced teachers.

Academic Rank. Categories are lecturer (3) instructor (1) assistant professor (13) associate professor (48) and professor (46). The need to improve "small group discussions" was associated with higher rank. This can be interpreted as in the discussion of age. After a number of years of lecturing, (older and) higher ranked colleagues may come to place more value on small group discussions.

The Means item "Team teaching and opportunities for observation" was related to lower academic rank (and lower degree).

Needs and Means

Table 4 summarizes the statistically significant correlations between needs and means items in Survey IV. The need "small group discussion" was associated with (1) "circulating a newsletter" and (2) "holding workshops". The need to improve "handle questions from students" was the similar, but also showed negative correlations indicating inverse association with extrinsic "rewards and weighting teaching more heavily in personnel decisions".

Negative correlations suggest needs #5 and #7, "evaluation of student performance", and learning to "ask students worthwhile questions" would not tend to be met by "providing more support services". Further study on needs/means relationship will hopefully shed light on the interface between these two dimensions.

A greater number of "additional comments" and signed complaints and objections distinguished the recent survey from earlier ones. Our colleagues seem to be more agitated than five years ago.

SUMMARY

The highest ranked needs to improve teaching were "evaluation of student performance", "asking students worthwile questions" and "small group discussions skills". The highest ranked means to achieve these are "providing more funds for teaching", "holding workshops on teaching techniques", and "providing more team teaching opportunities".

The questionnaire revealed both a stability in some items and a sensitivity to trends and changing times. Intercorrelations between needs and means, the intra-rank ordering within the needs and means lists suggested directions for future work. Finally, these findings suggest (1) teaching improvement may be sought in the reward structure and in "hands-on" activities (workshops and team teaching), and (2) support for the Club of Rome report emphasizing participatory learning, through more involvement in group activities and less lecturing.

References

Centra, J. A. Faculty development practices in U.S. Colleges and universities. Princeton: Educational Testing Service, 1976.

Foster, S. F. Teacher as participator. Proceedings, Eighth International Conference on Improving University Teaching. Berlin, 1981, 4, 367-374.

Foster, S. F. The Club of Rome Report and requirements for a a new learning theory. In R. Glaser & W. Lompscher (Eds.) Cognitive and Motivational Aspects of Instruction. Amsterdam: North Holland Scientific Publishing Company, 1982, 22-32.

Foster, S. F. & Nelson, J. G. Teaching improvement in Canada: Data concerning what and how. Canadian Journal of Higher Education 1980, X, 120-125.

Nelson, J. F., Foster, S. F., & Rattan, G. Needs assessment for university teaching improvment: Instrustors rank their priorities. Proceedings, Fifth International Conference on Improving University Teaching. London, 1979, 4 1649-1655.

Sheffield, E. F. Teaching in the universities: No one way. Montreal: McGill-Queen's University Press, 1974.

Table 1

Teaching Improvement Needs: Ranks and Median Priorities

	Surveys*		
Needs for Improvement	I	II	III
1. Lecture delivery	5 (4.5)	4.5(4.4)	5 (4.6)
2. Discussion Techniques	1 (2.5)	1 (2.8)	1 (3.3)
3. Organization of Teaching Resources	6 (4.6)	2 (4.0)	3 (3.8)
4. Handling Student Confrontations (Survey I)	7 (6.3)	--------	--------
4. Student Counselling and Problems (II, III)	--------	8 (5.9)	8 (5.9)
5. Evaluation & Grading	3 (3.9)	4.5(4.4)	6 (5.0)
6. Group Work	2 (3.5)	3 (4.2)	2 (3.7)
7. Independent Study	4 (4.1)	6 (4.8)	4 (4.0)
8. Use of Audio-Visual Media	--------	7 (5.6)	7 (6.2)

	Survey
	IV
1. Small group discussion or discussion with individuals	3 (3.7)
2. Handling questions from students	6 (4.8)
3. General organization	5 (4.6)
4. Dealing with academic or administrative superiors	7 (6.7)
5. Evaluation of student performance	1 (3.5)
6. Supervising individual projects	4 (3.8)
7. Asking students worthwhile questions	2 (3.6)
8. Self control (e.g., control of worry or anxiety, "getting started")	8 (7.4)

*Rank (Median) 1 = highest priority

Table 2

Teaching Improvement Means: Ranks and Median Priorities

Means for Improvements	Surveys*		
	II	III	IV
1. Circulate a newsletter on teaching improvement ideas	6 (5.0)	5 (5.0)	4 (4.4)
2. Provide funds for teaching or course improvement	4 (3.7)	3 (3.1)	1 (3.0)
3. Weight teaching more heavily in personnel decisions and provide monetary rewards and fringe benefits	3 (3.1)	4 (3.6)	5 (4.7)
4. Hold workshops on teaching techniques with consultants and speakers	1 (2.4)	1 (2.6)	2 (3.0)
5. Have Master Teacher Awards for good teaching	7 (6.6)	7 (6.1)	7 (5.4)
6. Provide for more team teaching opportunites and observation time	2 (2.9)	2 (2.9)	3 (3.4)
7. Provide more support services	5 (4.9)	6 (5.1)	6 (4.8)
8. Nothing beyond what is already done	8 (7.9)	8 (7.9)	8 (7.8)

*Rank (Median) 1 = highest priority

Table 3

Statistically Significant Correlations between Background Variables and Rated Needs and Means for Teaching Improvement: Survey IV

Variable	Needs (N)/Means (M)	Correlation	High priority related with...
Age (+=young)	N:#1 small grp dis.	-.21	older instructors
	M:#1 newsletter	-.18	older instructors
Gender (+=male)	N:#5 evaluation	-.17	female instructors
	M:#8 nothing	-.33	female instructors
Highest Degree (+=lower)	M:#2 funds	-.18	higher degree
	M:#6 opportunities obs.	.19	lowest degree
Years Teaching (+=shorter)	N:#6 supervising projs.	-.17	longer time
	N:#8 self control	.17	shorter time
Rank (+=lower)	N:#1 small grp. discus.	-.21	higher rank
	M:#6 opportunities obs.	.22	lower rank

*All correlations were P < .05 level, except -.33 (P < .01).

Table 4

Correlation Matrix of Significant Correlations between Needs and Means of Teaching Improvemnt: Survey IV

NEEDS

		1	2	3	4	5	6	7	8
MEANS	1	.20	.22	.	.	.	.	.	.
	2	.	.	.	.	.	.	.	.
	3	.	-.20	.	.	.	.	.	.
	4	.24	.24	.	.	.	.	.	.
	5	.	.	.	.	.	.	.	.
	6	.	.	.	.	.	.	.	.
	7	.	.	.	.	-.20	.	-.23	.
	8	.	.	.	.	.	.	.	.

*All correlations were P < .05, except .24 (P < .01).

IMPROVING TEACHING-LEARNING PROCESSES IN HIGHER EDUCATION THROUGH TEACHING-LEARNING LABORATORIES - A FINNISH CASE STUDY

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The pedagogical training of university teachers and the teaching tradition in Finland until 1980.

The status of pedagogical training for university teachers in Finland is very similar to the situation in other western countries. The professors are selected to universities on the grounds of research merits and people who vie to work in the universities are primarily interested in research (compare e.g. Hall & Bazerman 1982). This is the reason for which teaching is experienced as a duty belonging to the position and the development of teaching skills is not seen to be important. This attitude becomes still stronger due to the fact that the improvement of teaching skill is not reinforced formally in filling positions nor informally by other professors. Teaching skills are not seen as separate skills, but the attitude is very common that knowing the subject matter qualifies the specialist to teach - thus the greater the expertise the better the teaching.

The Finnish teaching tradition has been until 1970 very subject matter and teacher-centered. The difference compared to the English or American teaching tradition is considerable. The teaching tradition is important for teaching in higher education due to the fact that professors in higher education do not have any kind of pedagogical training, so the models of teaching come from their own school years and fellow university teachers. Student-centered modes of teaching-learning are not very popular in Finnish universities.

Until 1980 most of the activities designed to improve university teaching were limited to dissemination of written material, lectures, symposia and conferences on teaching problems. These however achieve only cognitive and attitudial changes at best. The problem lies in the fact that the professors who through literature, conferences and feedback received from students realise the need to improve their teaching, usually lack help or systematic advice on how to do so.

Teaching-learning laboratories

In recent years a new approach has been developed for improving university teaching, which tries to guarantee the change of behaviour, too. It is called a teaching-learning laboratory utilizing microteaching, simulations, video-self confrontation and Interpersonal Processes Recall Techniques. The theoretical conceptualization of these techniques are described by Perlberg (1976, 1984). Essential to this approach is a model based on self confrontation to change teaching behaviour.

Working procedures are based on "learning by doing" and intensive involvement principles. The teaching laboratory should not be perceived as a physical faculty but as a concept for a training system which encompasses a multiple set of activities in which a person is involved individually or in small groups. The involvement is not limited to the practice of teaching skills. The person engaged is involved in wide range of activities such as analysis of instruction based on various sources of feedback, experiencing self-confrontation, design of instructional and learning systems, practice in teaching skills and strategies, supervised experimentation and evaluation of new instructional systems in the class. It is noteworthy that this approach differs greatly from the teacher-centered teaching tradition used in Finland and from the guidance methods used in teacher education. Microteaching is a familiar method in Finnish teacher training, but it has been used more in training of specific skills.

Improving teaching-learning processes in Finnish higher education through teaching-learning laboratories.

The teaching-learning laboratory for improving university teaching came to Finland through two international conferences where this approach was demonstrated. One of these conferences took place in Finland 1980, where several people became interested in this new approach. Some of those interested were experts in pedagogics, their main interest being the development of their own professional skills. Others were people responsible for developing university teaching in their own university without pedagogical training. Soon after this conference two Finnish participants were sent to a workshop held in Sweden and one year later the workshop was held in Finland. The participants in Sweden were co-workers in this workshop and so began their independent work using the teaching-learning laboratory. It is worth noting that these persons had pedagogical and psychological training.

Because the first Finnish workshop was arranged by the Ministry of Education, not an individual university, the participants came from different universities around Finland. The participants in the workshops later arranged were from different universities as well. The workshops have been run 4-5 times a year. The facilitator has been either the foreign expert, the Finnish and foreign expert together or the Finnish expert alone. The innovation has spread step by step to new universities and at the moment over half of the Finnish universities have had some participants in some of the workshops. The participants of the latest workshops have been from the same university or even from the same faculty. The innovation has spread first to some people in different parts of the country and after that more broadly in the same university.

The participants in different workshops have seen the need to meet each other after these courses to help each other in solving problems in teaching. Thus a support group spontaneously emerged. The group has met 3-4 times a year. These meetings have been timed so that the foreign expert has attended some of them but they have been held without him as well. A more exact description of the innovative process is given in a paper by Gröhn and Perlberg (1983).

The strategies of local change agents in introducing the innovative concepts

In the beginning of the process two change agents were involved in the work, one of them a pedagogical expert, the other a professor interested in improving university teaching.* These people worked together in contacting key people and introducing the innovative concepts. This co-operation made the work easier, because both og them could utilize their own profession and contacts.

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(Finnish change agents include Terttu Gröhn and Singa Sandelin from the University of Helsinki and Veikko Porra from the Technological University of Helsinki and Professor Arye Perlberg from Technion Haifa as foreign expert.)

Contacts were made in two directions, a) people in university administration (ministry of education, rectors in the universities, teachers labor union etc.) b) professors in different universities especially in the institutes of teacher education.

In the beginning a foreign expert co-operated closely in introducing the innovation in different universities running miniworkshops and presenting the idea to key people in administration. Later on the local change agents took greater responsibility in the introducing work.

There are two points worth noticing in this work. Firstly, both professors and people in administration were contacted. Professors interested in innovation have to apply for money from people in administration and it is easier to obtain this, if these people are acquainted with the innovation. It was shown very clearly, that contacting only people in administration did not help in spreading the innovation because it is not their responsibility to arrange the pedagogical training of professors. Their duty is to promote those ventures initiated by professors. On the other hand the efforts of professors without preliminary contacts with people in administration failed many times.

The other point worth noting is the co-operation of foreign and Finnish experts. It is well known that no-one is a prophet in his own town so the help of the foreign expert was very valuable in changing attitudes. On the other hand local people are needed in identifying the key people and arranging practical matters.

In introducing the innovation different strategies were used: miniworkshops, presentations and videorecordings from the earlier workshops. Most efficient seem to be the miniworkshop, but also the most time-consuming. In short presentations, verbal descriptions or videorecordings were used. It was important to have some kind of concrete description of the approach, but something was learned by the errors ~~made~~ with inappropriate introductions.

At the beginning of the process of introducing the innovation a compiled recording was shown which included an Interpersonal Process Recall exercise, the lecture of one participant, the discussion following the lecture and the analysis of the video recording. It is important to remember that in a real workshop situtation there is a supportative and accepting atmosphere, which guarantees honest and open feedback to acting teachers, including negative feedback. The conveying of this secure atmosphere through video recording is difficult and the watcher easily gets the impression of stern criticism. The reaction many times indicated a reserved attitude towards the teaching-learning laboratory. So later on instead of the compiled recording, a recording of the evaluation session was used. The feedback given was mostly positive, describing the working process at the same time and this seemed to be more convincing than the compiled recording.

Microteaching is a central method in the teaching-learning laboratory approach and at first the workshop was called a microteaching-course. This was not a very succesful solution in many situations. There were two reasons for this: Microteaching has been used in teacher education in Finland, but the experiences have often been negative. Either the videofeedback has been felt to be a nonsensical observation of external aspects or the feedback had been so crushing that similar new experiences were not wanted. This excluded some teachers from the workshops. On the other hand staff members in the institutes of teacher education considered themselves to be knowledgeable in microteaching methods and did not see the value in participating in the workshop. "The teaching-learning laboratory" is a better name, although it is difficult to translate shortly into Finnish.

A third thing learned was the impression made on certain professors by the student-centered method including involvement at an emotional level. The representativens of some logical sciences could not easily see any connection between their logically proceeding instruction and a student-centered approach. They easily got the impression that this kind of improvement of teaching does not apply in their subject matter. Because the lecture is still the prevailing teaching method in Finnish universities, it has proved to be important in introducing the innovation to describe how to improve lecturing.

Professors in social and behavioural sciences had a more positive attitude toward student-centered approaches. It is true that even among these were amazingly many professors who were embarrassed with handling emotions in teaching learning situations. On introducing concepts the emphasis has to be adjusted according to the audience.

Confirming the change of the behaviour

The first problem in improving the teaching-learning process is convincing the decision-makers of the efficiacy of the approach. The next step is getting the participants, and the third step is confirming the real change in teaching behaviour.

According Bess (1982, pp. 196-197) the following stages are needed to achieve significant behavioural changes:

1. Unfreezing. Creation of the motivation to change.

2. Changing. Developing new beliefs, attitudes, values and behaviour patterns on the basis of new information obtained and cognitive redefinition.

3. Refreezing. Stabilizing and intergrating new beliefs, attitudes, values and behaviour patterns into the rest of the system.

The teaching-learning laboratory is efficient especially in the first stage of the change process in creating the motivation to change. It is possible in the teaching-learning laboratory to use the confirmation of present beliefs or behaviour patterns to induce a "guilt-anxiety" and create a feeling of psychological safety by reduction of threaths.

The teaching-learning laboratory is helpful in the second stage of change, too. There new beliefs and behaviour patterns can be created. There is, however, a danger that in a workshop of 3-4 days this process does not go far enough and the redefinition through new integration of information does not happen. The justness of this fear is shown in the research results of Joyce and Showers (1981). They claim that most experiental programmes were effective in helping trainees acquire sets of skills and strategies of teaching, but only five to ten per cent of the students could transfer these skills to natural settings. Joyce and Showers conclude that a combination of a study of theories, observation of demonstrations and intensive practice with intensive structured feedback, which includes video feedback, modelling and discrimination training, have helped most teacher trainees acquire the targeted skills.

The reason for low transfer might be that the training situation has placed too much emphasis on experience. The trainee might acquire a new skill efficiently, but if he does not understand the phenomenon in question on a theoretical and intellectual level he is unable to transfer the behaviour in natural settings.

In recent times the application of the insights of cognitive psychology to the development of higher education has become more common (Marton et al. 1977, Entwistle 1981) with its emphasis on depth of understanding and the comprehension of the significance of understanding the relationships between concepts and larger entities as a precondition for learning. All this implies that the accomplishment of lasting changes in behaviour requires a course to ensure theoretical understanding either built into the teaching learning laboratory or run consecutively with it. This section can also be conducted according to student-centered principles, exploiting the experiences of the teachers.

Planned future activities

Increasing attention has been given to the improvement of university teaching in recent years in Finland. The Ministry of Education is attempting to inspire development at the national level and many universities are developing their own instruction training programmes for professors.

A pedagogical training programme of the type outlined in the preceding section has been approved at Helsinki University to commence in December of 1984. The pedagogical training consists of three different courses combining the experiental and cognitive approach. During the first course an effort will be made to stimulate motivation for change using an experiental approach and exploiting the professors own experiences. In the next stage an effort will be made to reinforce the acquisition of new skills through theoretical in depth study. In the final stage the acquired skills will be rehearsed once again in an intensive microteaching workshop.

A question may be raised at this stage concerning the motivation of teachers to enter such a multi-phased training programme. The plan is to ensure motivation by making the course an automatic requirement for all new teachers. Additionally, attendance on the course will be taken into consideration in filling new positions. Thus the teaching-learning laboratory will gain an established position in the pedagogical training of all teachers in the university.

Another idea which has emerged from the experiences of the teaching-learning laboratory is the establishing of support group activities on a more formal basis in the form of a Finnish society for the improvement of university teaching, for example. In this way it is felt that activities can be extended over a wider area of the country and more persons can be drawn into the process of developing teaching in universities. Thus the improvement of teahing skills will hopefully gain in prestige and the functioning of small groups will no longer occur in isolation

References

Bess, J.L. 1982. Motivating professors to teach effectively. San Fransisco: Jossey-Bass.

Entwistle, N. 1981. Styles of learning and teaching: An integrated outline of educational psychology for students, teachers and lectures. Chichester: Wiley.

Gröhn, T & Perlberg, A. 1983. Korkeakoulujen opetus-oppimis-prosessin parantamismahdollisuuksia. Aikakausikirja Kasvatus pp. 414-420.

Hall, D.T. & Bazerman, M.H. 1982. Organization design and faculty motivation to teach. In J.L. Bess (Ed.) Motivating professors to teach effectively. San Fransisco: Jossey-Bass.

Joyce, B.R. & Showers, B. 1981. Teacher training research: Working hypotesis for programme design and direction for future study. Paper presented at the annual meeting of the American Educational Research Association, Los Angeles.

Marton, F., Dahlgren, L-O., Svensson, L. & Säljö, R. 1977. Inlärning och omvärldsuppfattning. Stockholm: Almqvist & Wiksell.

Perlberg, A. 1984. When professors confront themselves: Towards a theoretical conceptualization of the use of video self-confrontation in improving teaching in higher education. Higher Education: The international Journal of Higher Education and Educational Planning, Vol. 12.

Perlberg, A. 1976. The use of laboratory systems in improving university teaching. International Journal of Higher Education Vol. 5, No 2, pp. 135-151.

A PROFILE OF A FACULTY DEVELOPMENT PROGRAM IN AN OFF-CAMPUS ENVIRONMENT

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University of Maryland, Asian Division

AN OVERVIEW

In 1956 the Asian Division (AD) of the University of Maryland's University College began offering academic courses in United States military communities in Asia and the Pacific. The current program, embracing 56 locations in six countries and U.S. dependencies, is coordinated by a Director and support staff at Yokota, Japan, and is directly administered by four on-site Area Directors. Because of an emphasis on quality education which begins with recruitment of a teaching-oriented faculty, the AD has viewed faculty development as an essential element of support. Throughout the years it has tried to provide stimulus, primarily through guest lecturers such as Wilbert McKeachie. During recent years, despite U.S. trends toward curtailment of faculty development efforts because of rising inflation and declining enrollments, the Asian Division has attempted to initiate a systematic program. The problems in planning and implementation are those which would face any similar institution, particularly one composed of satellite campuses and employing both permanent and part-time lecturers. Like other institutions, the AD has to consider budgetary constraints: any faculty development program has to provide maximum results with a minimum of financial output.

The first steps in developing a systematic program were the appointment of a part-time Staff Development Specialist (SDS) prior to the 1982/83 academic year and a limited, but sufficient commitment of funds. The individual selected for the Staff Development position was recruited from the faculty ranks for two reasons: 1.) Having taught in all five of the major areas, she was familiar with unique teaching problems such as the presence of ESL students in certain classrooms. 2.) As a four-year lecturer for the Asian Division, she had already established rapport with faculty, making it relatively easy to solicit faculty input and participation, key ingredients for a successful program. Having appointed a SDS, the AD's next step was to plan and implement program components which would prove useful to faculty. Planning included both philosophical and practical decisions.

PLANNING A FACULTY DEVELOPMENT PROGRAM

Berquist and Philips (1977, pp. 16-21) caution that any effective faculty development program must address faculty motivation. Their model identifies motivating forces, all interacting, as an interest in teaching (process), relevance of subject matter (task), personal needs (internal sources of motivation prompted by needs for security, affiliation, esteem, identity and self-actualization) and the educational environment (external). The first three factors might be regarded as intrinsically motivating, the fourth as extrinsic. Tuckman (1976), Sitzer (1976), and Fenker (1977) have emphasized the importance of extrinsic elements such as the promise of reward (promotion, tenure) in motivating faculty to participate in development programs. However, the recent research indicates that "Faculty are innermotivated persons whose professional values move them to seek the rewards intrinsic to teaching regardless of the institutional policies that support that effort." (O'Connell, 1983, p. 662) This assumption of intrinsic motivation provides the philosophical core of the AD's faculty development program.

The program design had to consider a limited budget, a mixture of faculty (both full and part-time, experienced and inexperienced), and the far-flung geographical locations. Because workshops have traditionally proved a low-cost, mobile, flexible means of providing opportunities for faculty development, initial efforts focused on building a series of sessions which faculty could easily attend. Because most classes meet in the evenings, and most adjunct faculty maintain full-time jobs, the only feasible time to offer workshops is during weekend hours. The workshop format itself meets a number of objectives. Workshops provide a forum for faculty interaction, bringing together both new and experienced, core and adjunct faculty; provide an outlet for faculty views and concerns; reinforce the value which the AD places on faculty and teaching; provide a conduit to transmit basic knowledge about classroom practices and AD policies; reaffirm the value of the expertise of each participating faculty member.

The faculty development program was deliberately separated from the formal evaluation and reward system of the university, although workshop participation was encouraged by invitation letters from the on-site Area Directors, follow-up letters placed in the faculty files, and initiation of a Faculty File Update with questions concerning professional development. At Faculty Orientation the SDS delivers a speech on adult learners with an enthusiastic invitation to attend up-coming workshops. The AD is acutely aware of Centra's observation that "There is probably no better way to drive faculty away from a program than to identify it as a service for the inadequate." (1979, p. 59)

In the broadest sense, the AD has attempted to develop what Paul A. Lacey (1983) describes as a politically astute faculty development program, one which provides institutional support for faculty who are serious about their professional lives and teaching aspirations. Through a series of core workshops, the program attempts to provide a sense of both continuity and momentum.

THE WORKSHOPS

I. Basic Teaching Workshop

The heart of the faculty development program has been a seven-hour teaching workshop which can be modified, if need be, to five hours. The workshop was designed after consultation with faculty, acknowledging--and profiting from--the fact that faculty input is essential to a successful program. The agenda includes units on assumptions about teaching; first impressions in the classroom; course planning (emphasizing syllabus construction); evaluation, and creative teaching (including lecture and discussion techniques, the importance of organization and concreteness). The workshop activities can generally be regarded as "low-risk," with faculty-generated discussions which often include pragmatic, anecdotal advice about topics such as plagiarism, motivating the tired adult learner, and even tips for reproduction of course materials. The presentations are focused by an 80-page resource booklet giving practical advice and handouts.

In the year-and-a-half since the appointment of the SDS, eleven of these basic workshops have been held in six different locations, including mainland Japan (two sites), Korea, Okinawa, Guam, and the Philippines. A total of 124 faculty have participated, a remarkably high percentage of participation given the fact that in Term III of 1983 the AD employed a total of 112 adjunct lecturers and 70 core faculty. After the first five workshops, the AD conducted a formal review of the evaluation forms completed by forty-eight participating faculty. The results suggested that the workshops were well-received. Forty-five people, for instance, indicated a desire to attend another faculty development workshop; 47 would recommend workshops to their colleagues. A question to determine the impact of the workshop on classroom behavior suggested that a majority of faculty (39) felt the workshop had caused them to change in significant ways, either through an attitude change or through new knowledge. Faculty suggested that follow-up workshops be more specialized. As a result of this latter finding, the AD added two more standard workshops to the regular offerings.

II. Microteaching

The AD began offering Microteaching workshops in July of 1983. Implementation involved training for the SDS, purchase of portable video equipment and considerable logistic support to arrange sessions, participants, classrooms, and equipment. The sessions are kept to a day-and-a-half with limited enrollments. A total of 22 faculty have participated in the three workshops offered to date on Guam, Okinawa, and Korea. Support for this workshop includes a pre-session booklet and in-session handouts. Post-workshop evaluation forms are uniformly enthusiastic.

III. Writing-Across-the-Curriculum

Because the AD faculty generated a Writing Standards Policy which is now incorporated in the Division Catalog and Student Handbook, it seemed logical to provide administrative support by making Writing-Across-the Curriculum workshops available. These sessions are limited to only two hours so that more faculty can attend. For these specialized workshops, the AD has relied on well-qualified consultants: the Assistant Director for the Junior Composition Program on the College Park campus and a new faculty member with training in WAC methods from Beaver College. A total of 52 faculty have attended workshops held in Japan, Okinawa, and Korea. Informal feedback has been positive.

OTHER INSTITUTIONAL METHODS OF SUPPORT FOR FACULTY DEVELOPMENT

I. Specific Disciplines

Since July of 1981 the AD has appointed coordinators in four areas: English, Asian Studies, Business, and Math. These coordinators provide guidance in teaching, upgrade resources, and offer specialized workshops and discipline meetings. The English Coordinator, for instance, distributes thrice a year a newsletter discussing teaching practices and current scholarship, new composition and literature texts in the Faculty Loan Library, and general departmental news such as textbook selections. She visits classes on an on-going basis, providing feedback through individual conferences and a formal letter, and offers yearly four-hour workshops, supported by resource booklets, on specific topics such as "What Research Indicates Works in the Composition Classroom" and "Helping Students with the Composing Process."

II. General Support

The AD tries to foster a sense of commitment to teaching throughout all its activities. Thus, recent efforts to support faculty have included the organization of a new Faculty Loan Library with upgraded facilities and a full-time librarian; new guidelines and a system of peer review for faculty-generated mini-courses; new publications including a Faculty Guide and Student Handbook, a booklet called "The Compleat Syllabus" focused on course planning, and a teaching and travel magazine called Destinations with articles by current faculty. The administration sponsors on Okinawa monthly colloquia where faculty give presentations on current research or teaching projects. Topics have included "Stress Management," "Avoiding Faculty Burnout," and "Victimless Crime and Civil

Liberties." The Staff Development Specialist is available for consultation and confidential classroom observations.

Although required classroom visits by Area Directors and Coordinators and required student evaluation forms could be construed as part of the formal evaluation process, they do provide faculty with two additional means of measuring their effectiveness in the classroom and thus can be considered in the broader context of faculty development.

CONCLUSION

An Institution such as the University of Maryland's Asian Division with its commitment to teaching ideals, can not afford to pay mere lip service to faculty development. Thus, a systematic program is essential to foster the faculty's innate dedication to the craft of teaching and to their students. Wilbert McKeachie suggests that faculty can be motivated by

> . . . [P]eer support, a feeling of autonomy and control over one's work, a sense of stimulation from one's students and colleagues, and an administration that encourages rather than restricts faculty initiative. (1982, p. 462)

Faculty must be given opportunities to develop themselves professionally, particularly in isolated overseas areas far removed from the normal support systems provided by a large campus. The AD has found that the easiest way to provide these opportunities is to establish a series of workshops which are scheduled at convenient times. Such workshops can be moved to different locations and in most cases scheduled with minimal costs. The financial commitments involve salary and travel expenses for the Staff Development Specialist and consultant, and support such as the purchase of video-equipment and reproduction of workshop materials. Because the workshops are normally scheduled during weekend hours, no release time or compensation is offered to faculty who participate. Their meals and light refreshments, however, are provided during the longer workshop sessions. Overall, modest investments have generated a great deal of faculty good-will and increased teaching expertise. The AD agrees with Kenneth Eble's observation that "How teachers learn on the job and how they continue to learn about teaching is one key to maintaining teaching excellence." As an institution it strives to "create a climate conducive to learning and foster activities that result in learning." (1983, p.120) Faculty and students deserve no less.

REFERENCES

Berquist, William H. and Steven R. Phillips. *A Handbook for Faculty Development. Vol. II.* Washington, D.C.: Council for the Advancement of Small Colleges, 1977.

Centra, J. A. *Faculty Development Practices in U.S. Colleges and Universities.* Princeton, N.J.: Educational Testing Service, 1976.

Eble, Kenneth E. *The Aims of College Teaching.* San Francisco: Jossey-Bass, 1983.

Fenker, R. M. "The Incentive Structure of a University," *Journal of Higher Education*, 48 (July/August 1977), 453-71.

Lacey, Paul A. "The Politics of Vitalizing Teaching" in *Revitalizing Teaching Through Faculty Development.* Paul A. Lacey, ed. San Francisco: Jossey-Bass, 1983, pp. 95-106.

McKeachie, Wilbert J. "Enhancing Productivity in Postsecondary Education." *The Journal of Higher Education*, 53 (July/August 1982), 460-464.

O'Connell, Colman. "College Policies Off-Target in Fostering Faculty Development." *Journal of Higher Education*, 54 (November/December 1983), 662-675.

Spitzer, D. R. "The Imporance of Faculty Attitudes in the Planning of Instructional Development." *Research in Higher Education*, 5 (1976), 97-111.

Tuckman, H. P. *Publication, Teaching, and the Academic Reward Structure.* Lexington, Mass.: Lexington Books, 1976.

PROJECT METHODS IN ENGINEERING

FRIDAY, 6 JULY

1430 - 1600

ENGINEERING PROJECT WORK - A FURTHER LOOK

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1. INTRODUCTION

Project work is carried out in a large number of departments of science and engineering in British Universities, according to the Society for Research into Higher Education (SRHE 1975, 1978). David Jaques (1979) was a member of an SRHE group investigating student opinion of project work and, using similar methods, Bell et al (1981) showed how student opinion of project work might be used to improve the management of project work. This study is a continuation of the 1981 work, investigating the projects of students under the supervision of the same staff members as the earlier study, in an attempt to determine whether any improvements had taken place and whether the changes made necessary by recent financial constraints in one British University had influenced project work.

2. THE PRESENT INVESTIGATION

The investigation was carried out by asking students in the Civil Engineering, Electrical Engineering and Mechanical Engineering departments of the University of Manchester Institute of Science and Technology (UMIST) for views about their projects. There were six students of the Civil Engineering Department participating in the study who all had projects supervised by the same member of staff as the students involved in the earlier study. There were four students in the Electrical Engineering Department and two in the Mechanical Engineering Department. The supervisors in these departments had also participated in the 1981 study.

The students were asked to complete a questionnaire, to fill in diary forms throughout the project and to attend brief interviews at various stages.

2.1 Questionnaires

The students were asked to complete the questionnaires at an early stage in the project. The questionnaire used was identical to that used in the 1981 investigation. The students were asked about their choice of project topic, particularly about factors that influenced their choice. They were also asked about the allocation of projects in their departments and about their knowledge of the assessment weighting, procedures and practice.

2.2 Student diary forms

The diary forms were used to monitor student progress throughout the period of project work. Attention was particularly directed to literature searching, recording the work done and its success, in the opinion of the student, together with brief details of any difficulties encountered and their solutions. Students were also asked to record how much time they had been spending on the project, both inside and outside the laboratory. Each student was asked to complete three diary forms each term, approximately one form for each three week period.

2.3 Student interviews

As in the previous study, the students in the Civil Engineering and Mechanical Engineering departments were asked to attend four interviews, because two ten week terms were allocated for their project work, whilst the students in the Electrical Engineering Department were asked to attend three interviews as their project work had to be completed in one term.

The first interview usually took place very early in the project work period and was used to explain the purposes of the whole survey, to elicit from students what they saw as the purpose of their projects and what work they felt they would have to do to complete the project. They were asked about their previous training and experience in literature searching report writing and about their part in planning their project work.

The final interview was used to obtain a student perspective on the whole project experience, the learning outcomes and to discuss report preparation. The other interviews were used to supplement the diary information and to investigate in detail any problems that may have arisen, in particular the nature of any help provided.

3. RESULTS OF THE INVESTIGATION

3.1 Questionnaire Responses

3.1.(i) Project choice

All the students claimed to have had a choice of projects, unlike the earlier survey (Bell et al, 1981) where two students felt they had no choice. Eight of the nine students gave their interest in the topic as a reason for their choice of project and the practical relevance of the topic. Seven of the students (78%) indicated that they had a desire to work with a particular project supervisor, as compared with 43% in the earlier investigation. All these seven had been influenced by the supervisor's reputation in project supervision - a higher proportion than in the previous survey. As in the previous survey, all the students claimed that they wished to learn more about their project topic and were not influenced by the ease of the topic.

3.1.(ii) Assessment procedures

Students were asked about the assessment of project work and an improvement in the student knowledge of the project assessment weighting was observed. All students knew, to within 1%, the correct weighting of project work, whereas only 63% of the students had been correct in 1981.

There was still some uncertainty in the students' minds about what was included in the assessment and who would be carrying out the assessment. All knew that the practical work done, the analysis of results and conclusions would form the basis of the assessment but two of the students felt that the literature survey was not included in the assessment and three students expressed the view that the quantity of work done was included. Supervisors stated that the literature survey was included in assessment and that quality of work done was more important than quantity.

3.2 Interview and Diary Results

These are included together since the diary forms frequently served as a basis for the interviews, in addition to the structured interview format.

3.2.(i) Preparation for project work

As in the previous investigation, more of the students had completed a thorough literature survey before commencing their work and none of them had been asked to produce a proposed plan and notional work programme for the project. In two cases the students did not begin to look through the literature until report writing became a major consideration. Most of the literature used had been provided by supervisors and students confessed to having little experience of literature searching. When pressed about following up references given in lecture courses the response from most students was typified by one response 'I spend so much time writing practical reports, preparing drawings and other material for assessment that I do not have time to follow up all the references. In any event, I have got to the final year of the course without needing to check references in order to pass the examinations, that I see no need to do so now'.

5.2.(ii) The nature of project work

There was some evidence that the nature of project work was changing. In the earlier survey, all but one of the projects had involved the students in building, modifying or calibrating equipment to suit their purposes followed by use of equipment to do something new, or to take measurements under new conditions. In this survey four of the projects had involved students in writing computer programs, followed by testing the programmes on data provided from external sources. These computing projects suffered from the fact that the availability of computing facilities sometimes did not fit well with the students' other commitments. However, the students coped with this problem by adjusting their work pattern such that they used the computer terminals at weekends and in the late evenings, when the demands of other users had decreased.

5.2.(iii) Student learning outcomes

The main learning, as seen by the students, was related in improved understanding of their selected topic area, together with improved knowledge of experimental techniques or computer programming and confidence and ability to use them. One student commented at the end of his project work "It seemed so easy in theory but it was only when I tried to measure the wave form that I realised that the practical problems were complex. I now understand the topic area well and it has helped with other topics, where I can now see that there must be similar difficulties".

These findings were similar to those in the earlier study and again some students claimed to have learned more about their departments and the manner in which they operated, as well as how successes, failures and frustrations affected their performance in and attitudes towards project work.

3.2.(iv) Project work assistance

All the students in this survey stated that they had a good relationship with their academic supervisor and had been impressed by the availability of supervisors. Assistance from other technical staff and computation officers had been good but five students stated that, at some time during their project work, they would have liked more assistance. They recognised that these individuals concerned had a heavy work load and felt that more assistance should be available. The decline in the number of support staff had already begun at the time of this survey and is still continuing. This seems a likely problem area in the future particularly for laboratory based practical work.

It is not the complete story, because in one case at least the professional judgement of the supervisor was responsible for a student not receiving the assistance he would have liked. The supervisor felt that the student relied too heavily on a particular technician for ideas and help. The technician was therefore instructed to do other urgent work and to allow the particular project student to work more independently.

4. CONTROL OF PROJECTS

At the end of the project work, more of the students had thought about the cost of the work. When asked to estimate the costs they did not consider staff time at all, running costs for machinery and computers were sometimes mentioned, and the capital cost of large items of standard equipment and depreciation costs were not included. The main items included in students' estimates of costs were components bought specially for the particular project and consumable materials. None of the students had been given any financial control of a project and all costs had to be authorised by the academic supervisor.

The students had not been involved in the planning of the project initially. Supervisors had specified and ensured the provision of equipment and put forward a suggested scheme of working. The students had to organise the project work within the limits of time and facilities specified. None of the students claimed to have been asked to provide a proposed plan of action, with time scale, in written form at any stage during the project.

5. DISCUSSION

Because of the small number of students involved, the individual nature of the projects and the interaction between students and academic staff supervisors, it seemed inappropriate to the authors to try to apply statistical techniques to the student responses.

Compared with the earlier survey by Bell et al, 1981, the supervisors had improved in making knowledge of assessment procedures and access to previous project reports, readily available to students. The students all found their supervisors to be readily available and had selected their projects because of the supervising reputation of the member of staff concerned.

This suggests that one of the effects of carrying out a survey such as this is to encourage the staff to perform their supervising duties well.

Since the earlier work, there has been an introduction of more computer-based project work. This was done in part to reflect the increasing use of computing methods in engineering, but this change brought with it some problems of computer access and a suggestion from one student that such work was more theoretical than he would have wished. The introduction of this type of project work was also done in order to keep the demands for the use of experimental equipment and technician assistance to a lower level. This was seen to be necessary by one of the project supervisors because of the reduced number of technicians available as a result of financial constraints and consequent offers of enhanced early retirement terms to technicians, on condition that departments would not replace them. This effect was also evidenced by the students' comments that they would have liked more assistance, though they were satisfied with the quality of technician services - when available.

In a time of reduced resources available to academic departments, it is hardly surprising that financial control of project work was firmly in the hands of the project supervisors. Unfortunately this led to the students having no knowledge of the cost of their project work, which is clearly undesirable when practising engineers are subjected to financial constraints in their normal work.

A large proportion of the project planning and organisation was also controlled by supervisors rather than students. This could be partially overcome by asking students to select the equipment and approaches to their project problems before the commenced project work. This may present difficulties of control when the student-selected approach is not possible because of the lack of suitable equipment and/or the lack of adequate finance. Clearly more thought needs to be given to these problems if students are to be prepared to take on projects as professional engineers after graduation.

This survey has shown that project work supervision has improved, that student learning outcomes have not changed and that there are still areas to which more thought is needed, if projects are considered as part of preparation for employment as a qualified engineer. Financial constraints have affected both the nature of project work and the support for students in this one academic institution Further improvements can still be made but the present financial constraints seems unlikely to make them difficult to achieve.

REFERENCES

BELL, F.D., NARAYANAN, R.C., NOBLE, C.F., WATERFALL, R.C. (1981).
'An attempt to improve project work as a result of student responses'.
Ingenieur pädagogik - Perspektiven Für die 80er Jahre Referate des 10 Internationalen Symposiums I.G.I.P., "Ingenieurpädagogik 81" pp.301-310.

JAQUES, D. (1979).

'The experience of projects'.

Proceedings of the Fifth International Conference, Improving University Teaching. University of Maryland. pp.690-697.

SRHE (1975).

'Project Methods in Higher Education'.

Editor: S. Goodlad. SRHE.

SRHE (1978)

'Research into Teaching Methods in Higher Education'.

4th Edition 1978.

Beard, R.M., Bligh, D.A., Harding, A.G. pp. 75-79.

MATCHING TEACHING WITH DEMANDS OF DIFFERENT KINDS OF WORKPLACE - - A CASE STUDY RELATED TO ENGINEERING MATERIALS AS THE MAJOR SUBJECT

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Introduction

The university of Luleå was founded in 1971, initially as a school of engineering. Its consequent expansion has turned the school into a faculty of technology, comprising schools of mechanical engineering, computer science and engineering, geotechnology, environmental planning and design, and civil engineering.

The university was established by an act of the Swedish parliament with the primary aim of contributing to the overall development of Norrland, the sparsely populated vast northern region of Sweden Norrland's economy has been, until recently, almost totally dependent on basic industries, such as forestry, iron ore mining and dressing, hydroelectric power, and indigeneous reindeer breeding. In the past 20 years, a considerable industrial build up and diversification has taken place, hence the establishment of a university with a strong technological orientation was considered highly useful and generally beneficial.

There is no doubt that the Swedish goverment acted with the best intentions, as a very ambitious industrial programme for Norrland was envisaged, e.g. the construction of "Steelworks 80", a giant 4 million tons-per-year steel mill, to name the most ambitious state-backed project. However, the oil crisis of 1973 triggered a world wide recession, the effects of which have never been totally overcome. It is now generally accepted that the fast rate of growth in industrial production as we knew it in the sixties, will never return. This is not merely a consequence of overall higher energy costs (more than an order of magnitude), but also of environmental and conservation considerations, not mentioning a change of priorities, such as a gradual re-evaluation of free time, introduction of the information transmission industry etc.

The impact of these consequences upon the new university was that the envisaged local market for engineering graduates shrunk to a fraction of the expected numbers and the school of engineering found itself involved in hard competition with established institutions, such as the Royal Institute of Technology in Stockholm and Chalmers University of Technology in Gothenburg.

It became vital for the University of Luleå to acquire a unique profile in order to attract applicants and to educate them so as to give them an equal or possibly superior chance for jobs in the current limited market for professionals.

In the following I shall limit my considerations to the School of Engineering, which now offers these major subjects: machine design applied mechanics, industrial electronics, industrial economics, engineering materials, production technology, transport technology, wood technology, and work sciences.

My own teaching and research interests lie in engineering materials, notably metals and alloys. This discipline is one of several areas of education which were given considerable priority in funding and curriculum planning, primarily with the aim of making it an integral part of the university's profile. As things stand now, our M.Sc. graduates majoring in engineering materials recieve more total tuition and spend more time doing laboratory and practical work than their contemporaries at any other university in Sweden.

Analysis of job opportunities for materials engineers

Theoretically, the developed and highly diversified Swedish industry ought to provide a considerable number of openings for this category of graduate. In reality though, many responsible managers are frequently reluctant to consider employing a materials expert for variour reasons. These may include an inherent conservatism (we have managed reasonably well without one), uncertainty about a candidate's worth in relation to his salary (can we really justify his salary and related costs?), or even a lack of rapport between the long employed engineers and the new graduate (we have a well functioning system for design and computerized calculation of all solid mechanics problems, so what can he contribute with his special knowledge of such abstract things as phase transformations or dislocation reactions?)

Naturally, these examples are somewhat simplified, because many companies utilize processes, such as heat treatments, surface treatments, welding, and they are thus highly conscious of the need to have qualified experts to supervise and develop these production processes. We have, nevertheless, made an attempt to analyze the major different types of work place for a materials engineer. These can be classified as follows:

1. Research institute or research and development department of a large company.
2. A small-to-medium company, producing or processing materials, e.g. a foundry, a surface treatment shop, a manufacturer of plastics, etc.
3. A small-to-medium company, consuming materials, e.g. a manufacturer of final products.
4. An educational establishment, i.e. high schools, technical colleges, universities.
5. Others, such as consultant bureaus, government or non-govt. agencies, etc.

Let us now consider the typical features of a graduate´s work at the above listed categories of work places and the principal requirements imposed on him.

1. The graduate will be assigned to a team with a fixed work programme. He will be expected to contribute with his knowledge and/or experimental skill and to rapidly increase his working capacity, be in in a limited field. He will communicate predominantly with fellow experts. This kind of job, although possibly the most demanding in purely academic terms, is probably the simplest to adapt to for a high ranking student and graduate.
2. Conducted interviews with former students and job descriptions indicate that it is fairly easy for a graduate to meet the demands of a materials manufacturing or processing company. His most probable first task will lie in the quality control of the produce and its maintenance. Assignments related to improvements or alterations in technological processes are not usually given to newly employed staff. The graduate can count on finding himself in the company of at least one, probably more, senior professionals with a similar background, hence easy to work with. The success in his

carreer will probably depend more on his post-graduate efforts than on his acacemic performance.

3. It is this category of employer that pose a problem and a challenge to both the university and the graduate. It is also the largest "sink" for the materials engineer, hence it is of primary importance that their education and acquired skills match the highly diversified demands of this group of employers. The said demands can cover materials selection, failure analysis, complaints management, advising the shop managers or production engineers, discussing problems with salesmen and the economic staff, perusing catalogues, standards, advertisments, making recommendations and decisions, often at short notice, the list of duties may seem never ending. To make the matter worse, the graduate may find himself in a communications vacuum, if he happens to be the only materials engineer on the technical staff.
4. The kind of work facing the graduate requires a special interest on his part, such as in teaching or postgraduate research. Those who compete for such positions are usually well aware of and prepared for the demands.
5. Positions listed in this group are usually sought by graduates possessing additional talents, such as knowledge of more than one foreign language, an above-average ability to write and compile technical and non-technical reports and the like. These positions are relatively few and the appointment of a fresh graduate is considered to be a high individual achievement.

An outline of a course aimed at helping materials engineering students adapt themselves to the demands of the manufacturing industry

The very best way to prepare a student for an envisaged future challenge is to let him work on a real problem and assist him through supervision and consultation. This is the basis of the course, somewhat narrowly named "metallurgical case studies", presently obligatory for senior (4th year) students of engineering materials. The course, whose concept originated at Chalmers University of Technology over ten years ago, is presently given only at Luleå University. The reason for this is obviously the relatively small number of graduating students in Luleå, which oscillates around ten per year, thus making the course more easily manageable. The course is spread over

2 terms, usually from mid-September to mid--February. The syllabus includes a few introductory lectures, such as literature searching, report writing, and modern available laboratory techniques, regular consultations, laboratory work, industrial visits, two oral seminars, and report writing.

The course starts with a presentation of the problems or projects, which is usually done dy representatives of the "customer" companies themselves. The students then choose the projects, subject to the supervisor's approval of their choice. It is customary for a project to be taken by a group of 2 or 3 students, rather than by individuals. Nominally, 240 hours are assigned to the course, however, experience shows that students voluntarily exceed this nominal number by spending considerably more time in laboratories and the library.

The typical problem dealt with in industry usually calls for co-operation with other individuals, often with different backgrounds. The ingeneer must often make recommendations based on reasoned guesses rather than exact calculations. Developing a facility to reason, as well as to provide the experience in co-operating with other experts, are the major goals of the course. Another is a develop the art of presentation of technical matters to both experts in the field and laymen in responsible positions. Hence there are always two seminars, in which the students present their findings, results and recommendations accordingly.

The actual problems may deal with failure analysis, materials or process selection (e.g. powder metallurgy or cold forging), or new applications for materials. Both technological and economical aspects are mostly involved.

The fact that the projects are proposed by industrial companies themselves makes the course not only as relevant as can be, but also makes the costs bearable. The companies are not expected to pay anything for the students' time, nor for the costs of the laboratory work done in the department, but they are responsible for whatever work is done on their premises and for the students' travels if these are necessary.

The staff members, assigned to the individual student groups as consultants, are faced with many difficult tasks. Unlike teachers of conventional courses, they cannot know what the outcome of the students' work is going to be,nor even which direction the work is going to take. They must do their best to keep the interest of the group in its project at a high level. Experience has shown that this is particularly important in the early stages when the group can easily become frustrated at the quantity of literature published on its subject, bearing in mind that this is the students' first contact with the great ocean of literature outside the narrow scope of their normal course books and some additional material, usually provided by their teachers. It is usually the first tangible results of some laboratory experiments, pointing to some kind of solution, which trigger a very high degree of interest on the part of the students, making them deeply engaged until the end of the work. Needless to say, a successful seminary presentation and appreciation contributes to the working morale of the group which at that stage is usually very high.

Many of the reported results, solutions, or recommendations, have been fully or partly implemented by the companies involved. Records of these successes are, no doubt, appreciated by all parties involved and sometimes boost the students' chances for a position of their choice.

Successful accomplishment of the course programme contributes most definitely to the students' preparedness for the challenges of their future workplaces, and raises their confidence in their own abilities.

Sources:

1. K.E. Easterling and H.F. Fischmeister: Metallurgical Case Studies for Engineering Students, Metals and Materials, 452, October 1973.

2. Evaluation of the University Education Reform (in Swedish). Proceedings of the Conference, called by the Office of the Chancellor of the Swedish Universities, June 1973. Section on Matching the Education with the Work Market.

3. G. Östberg: System Problems in the Implementation of High Quality Materials Technology. Proc. of the International Conference on Metal Sciences - The Emerging Frontiers, Varanasi, India, November 1977.

4. Conducted interviews with graduates of Luleå University.

OPTIMIZING TEACHING FOR DIFFERENT KINDS OF STUDENTS

FRIDAY, 6 JULY

1630 - 1800

SUCCESSFUL TEACHING BASED ON A COGNITIVE THEORY OF TEACHING AND STUDYING

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"Successful teaching" may be viewed as the sum of preparation, process, and product. The purpose of this paper is to consider how each of these factors of successful teaching is affected by a cognitive theory of teaching and studying. Before doing so, however, several definitions are necessary.

Definitions

First, "successful teaching" may be defined as follows: A class where successful teaching has taken place will have at least 90% of the students attaining a minimum mean performance of 60% correct on multiple-choice tests and a mean pretest-posttest gain of 100%. To apply such a restrictive definition--applicable to subject matter where a multiple-choice test is appropriate--a pretest and a comprehensive posttest or the averaging of a succession of posttests are required to compute a gain score. The posttests may be prepared to ascertain the attainment of specific goals, such as mastery of concepts or principles. In short, our working definition attempts to measure quantity (i.e., the number of students passing) as well as quality (i.e., the degree of achievement and attainment of specific knowledge or skills).

Second, "preparation" as used here is primarily what the teacher does; however, what the student does is equally important.

"Preparation" is the laying of the foundation for what will take place in the learning process, both in the classroom and in the place(s) of study chosen by the students. Instructor preparations may include reading, reviewing, making notes, preparing audio-visuals, and the like. Some of these preparations may be cursory ones (e.g., glancing at a topical outline before walking into the classroom), while other preparations may be the culmination of long weeks and months of capitalizing on new research findings (e.g., preparing a mastery system of learning statistics through computer-assisted instructions). Student preparations, on the other hand, may consist of something new (e.g., reading a chapter of a textbook to be discussed in the following day's class), or of something old (e.g., studying notes taken over a period of weeks to be covered in a future test).

"Process" includes those things which take place during learning, such as listening to lectures, asking and answering questions, reading, studying, and so on--the sequence of events that leads to the transfer of information from the sensory register to long-term memory. These are steps in which both teachers and students are involved, separately and interactively.

"Product" is essentially the intellectual and behavioral changes in a student. It is the sum of preparation plus process; consequently, if these two are handled in a superior way, then the product should likewise be a superior one. The product itself may be a grade, a piece of writing, a musical performance, and so on. Nevertheless, it must be something tangible that can be subjected to evaluation.

Having tentatively defined successful teaching and its components, we move on to an explication of the cognitive theory.

CPC Theory of Teaching and Studying

The CPC theory of teaching and studying has three components: (1) CPC, (2) pyramidal structure of knowledge, and chunking (Furukawa, 1977; Furukawa, Cohen, & Sumpter 1982). The *CPC* of a student is determined by a simple test consisting of two lists of 20 adjective-noun pairs (e.g., fresh strawberries)(Furukawa, 1977). After a 1-minute study period, in which one of the lists is shown in its entirety by an overhead projector, students are allowed 2 minutes to write the word down in any order. This process is repeated with the second list. Each correctly recalled word is scored one-half point for a possible 20 points for each list. The average of the scores on both lists is a student's CPC.

This CPC tells the student how many items of information he or she can profitably process during a brief exposure to them. Nevertheless, the test appears to be more closely related to long-term memory than to short-term memory (Furukawa, 1977). The mean and standard deviation of this limitation appear to be 7 and 2 (cf., e.g., Miller's magical number) (Miller, 1956).

The second component of the model, the *pyramid of knowledge*, recognizes that practically all knowledge has a vertical and a horizontal structure. At the college level, the pyramid of knowledge can be tentatively equated with an outline of a lecture or a book. Such an outline would reflect a vertical and horizontal structure of headings, subheadings, and key words categorized under a system of Roman numerals, capital letters, Arabic numerals, and so on.

In length, this outline differs from a lecture-note outline. Whereas the usual outline consists of complete statements the outline that is recommended consists of "headings" and key words that are normally the subjects (nouns and adjective-noun pairs) of paragraphs and sentences. Subjects are chosen for inclusion on this outline because they have the greatest redintegrative power or cue value in recalling information in a sentence (Horowitz and Prytulak, 1969). Since the primary purpose of the outline is to facilitate chunking of the discrete units of information, the outline is called the chunking study outline (CSO).

Chunking is the third component of the CPC theory of teaching and studying. It is a process whereby relatively discrete units of information are integrated into a single, meaningful whole. The terms "relatively discrete" and a "a single, meaningful whole" require explanation. When a child first encounters the letters *c*, *a*, *p*, *i*, *t*, *a*, *l*, these letters are initially "relatively discrete units of information," individual letters that do not convey meaning. As the child continues to examine the group of letters, a letter cluster or two (e.g., *cap*, *it*) may be discovered. Using these letter clusters as a foundation, the child soon realizes that the letters form the word *capital*--a word that is already a part of the child's speaking vocabulary; thus, "a single, meaningful whole" emerges. This chunking progression is almost limitless (Mandler, 1969).

To summarize, the model of teaching and studying consists of three components: CPC, pyramid of knowledge, and chunking. The

CPC is a gauge of the quantity of information that can be easily learned; the pyramid of knowledge, or CSO, is used to select quantities of information from and to act as an organizational framework; and chunking leads to the creation of a single, meaningful whole. Because of the dominant role played by CPC, the theory is called the CPC theory of teaching and studing.

The discussion now turns to a consideration of the relationship between successful teaching and the CPC theory.

Relationship of Successful Teaching and the CPC Theory

Let us see how the three components of successful teaching, are affected by the CPC theory of teaching and studying.

Preparation. The term "preparation" is a comprehensive one in which both of the other two components (process and product) are also considered: a teacher "prepares" the necessary materials and the steps to take in making certain that the "process" occuring in the classroom result in the "product" desired. The CPC theory would require, among other things, the preparation of tests (CPC, pretest, criterion tests, and posttests) and teaching/studying materials (CSO, lecture outlines, and audiovisuals).

Test preparations are relatively simple: word lists for the CPC test should be on overhead transparencies for group testing students, the pretest should consist of a representative sampling of future test items, the criterion test should contain a representative sampling of the contents of a chapter and lecture(s), and the posttests should consist of an appropriate sample of materials covered in several chapters and lectures. Since the tests are basically diagnostic in nature, parallel forms are necessary.

That is, if a student does not meet the minimum course requirement or a self-set goal on a test, the student should be encouraged to restudy and then retake the test.

The teaching/studying materials should include a CSO composed of key words in outline form, as shown in the example to follow. (The broken lines are not a part of the outline; an explanation is given later in the "process" section.)

I. Three levels of memory (p. 178)
  A. Levels
    1. sensory store
    2. short-term memory
    3. long-term memory
  B. Sensory store

- -

  C. Short-term memory
    1. seven items
    2. rehearsal
    3. retrograde amnesia
    4. coding

- -

  D. Long-term memory
    1. highly organized
    2. retrieval
      a. accessible
      b. available
    3. cuing
      a. mnemonic device
      b. categories

The appropriateness of all teaching materials can be measured in terms of the three components of the CPC theory of teaching and studying: (1) CPC. Do the materials provide means for the teacher/student to count units of information to permit consideration of these units in quantities that is suitable for the learner? (2) Pyramidal structure of knowledge. Does the hierarchical structure of the materials provide an organized and logical progression? (3) Chunking. Does the pyramidal structure of the materials permit chunking into single, meaningful wholes? If the answers to these questions are in the affirmative, then the preparation stage has been properly completed.

Process. The process stage can be dichotomized into what the teacher does and what the student does. The sample CSO shown earlier can also be used by the teacher as a teaching outline. In the outline, the broken lines indicate the quantity of information that a class of students with a mean CPC score of 5 should be taught at one time before something is done with it, for example, reviewing it and integrating it into a meaningful whole. The rationale for doing this is that five units of information is a quantity which matches the CPC of the average learner in this particular class. This quantity is the easiest to learn, with too much or too little adversely affecting student learning (Furukawa, 1970) and even student attitude (Furukawa, 1983).

The student can use the CSO to count units of information to match his or her own CPC. In the example, each set of units of information separated by the broken lines consists of about five units of information and is appropriate for a learner with a CPC of 5. The units of information under the capital letter heading (D. Long-term memory) exceeds five; however, in order to maintain the integrity and meaningfulness of the material, all of them should be considered by the student as a single set. By preparing a CSO for the student, then, we are accommodating the entire range of student CPC; consequently, the processing of information can become a completely individualized one.

Product. In the final analyses, any theory must be able to show supportive data. The CPC theory has been used at all school levels, from elementary to college, but the findings reported here are limited to those from the college level. There, it was found that low-CPC college students learning complex prose benefitted most from a programmed-instructional format based on the CPC theory (Furukawa, 1977). Not only were the overall immediate posttest scores of students superior, but the delayed posttest scores were also significantly in favor of the theory-based system.

In a second study, it was found that the performance of conditionally accepted students in an introductory psychology course was markedly improved by teaching them a study skill based on the CPC theory (Furukawa, 1982) and providing them with CSO (Furukawa, Cohen, & Sumpter, 1982). In fact, the passing rate (a letter grade of C with 60% or more of the multiple-choice items on a test being correct) of the students increased from 38% to 90%. It should be noted here that students were encouraged to retake tests when deemed appropriate.

The findings of a third study showed that as much as 95% of the facts, concepts, and principles learned--based on earlier test results--were retained over a three-month period.

These positive "product" findings are very encouraging.

Summary

Successful teaching at the university level appears to be possible by using a CPC theory of teaching and studying. At the preparation, process, and product stages of successful teaching, the CPC theory has specific suggestions for improvement that seem to lead to a quality product. Based on the findings to date, further consideration of the CPC theory to improve teaching appears to be warranted.

References

Furukawa, J.M. Chunking method of determining size of step in programmed instruction. Journal of Educational Psychology 1970, 61, 247-254.

Furukawa, J. M. Cognitive processing capacity and learning-mode effects in prose learning. Journal of Educational Psychology, 1977, 69, 736-743.

Furukawa, J. M. The successful student. Lutherville, MD: Superior Educational Resources, Inc., 1982.

Furukawa, J. M., Cohen, N. & Sumpter, K. Improving student achievement. Research in Higher Education, 1982, 16, 245-263.

Furukawa, J. M. Metamemory effects in learning from lectures. Paper presented at the annual meeting of the Eastern Educational Research Association. Baltimore, MD, February, 1983.

Horowitz, M. & Prytulak, L. S. Redintegrative memory. Psychological Review, 1969, 76, 519-5-31.

Mandler, G. Words, lists and categories: An experimental view of organized memory. In J. L. Cowan (Ed.), Thought and languages. Tucson, Arizona: University of Arizona Press, 1969.

Miller, G. A. The magical number seven, plus or minus two: Some limits on our abiliity for processing information. Psychological Review, 1956, 63, 81-87.

FACILITATING INTELLECTUAL DEVELOPMENT
IN UNIVERSITY HONORS STUDENTS

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INTRODUCTION

While there may be disagreement about what intellectual development is, or about how one can observe or measure it, educators generally agree that it should be fostered; that there is more to undergraduate education than the acquisition of factual knowledge and technical skills. It is also clear that students do, by and large, develop greater sophistication in their learning processes, whatever the learning environment may be. It is our contention, however, that by paying conscious attention to students' developmental processes and to their individual learning styles and personality types, one can enhance the progress of their intellectual development. To do this we, as teachers, must start by approaching the students where they are, not as if they are where we would like them to be. Paul Tillich has said that "to throw stones at the heads of people who have not yet asked the questions is the fatal pedagogical error."[1] We need to know what our students are ready for, and we need to have strategies for helping them move on to more developed stages. Skilled teachers know how to do this intuitively, but we believe that even the best teachers can benefit from paying explicit attention to the process.

In the General Honors Program at the University, we have, for several years, been working on such strategies with students in freshman level General Honors seminars, and have since 1981 made some attempts to evaluate the results of these strategies. In this paper we will report on some results obtained from these seminars. Specific data will be given for only two of the seminars: "Introduction to Compleat Wisdom,"[2] co-taught by two of us (JLH and NBP) in the Fall semester, 1981, and "Learning about Learning: A Conspiracy of Teachers and Students,"[3] co-taught by a different pair (FG and JLH) in the Spring semester, 1982. In "Compleat Wisdom" we read and discussed books chosen with the intention of showing that "what we see depends on where we are looking from and what kind of spectacles we are wearing." The aim was "to explore vigorously and experientially some world views alien to our own." "Learning about Learning" was devoted to "encountering experientially, intellectually, emotionally the various ways in which learning can come about," and was designed around experience and analysis of a number of different learning modes.

Although we do not believe that developmental processes are significantly different in honors students, or that our conclusions would not apply generally, the General Honors freshman seminars are particularly convenient for efforts of this kind. They are traditionally interdisciplinary in nature and tend to focus on process as well as content, and they are small enough (generally 10-15 students) for students to receive careful individual attention. The students in the General Honors Program, with an average combined SAT score of 1260 and average high school GPAs of 3.6, are more motivated and better prepared than the average college freshman.

The developmental model we have used to study our students' progress is William G. Perry's Scheme of Intellectual and Ethical Development.[4,5] To evaluate students' positions on the Perry scale we have used the Measure of Intellectual Development (MID), developed by Lee Knefelkamp and Carol Widick.[6,7,8] Two different versions of the MID are used, one at the beginning of the test period (the "pre" test), the other at the end (the "post" test), so that evidence of progress along the developmental scale can be obtained. The instrument was evaluated by pairs of trained expert raters, who, in cases of disagreement, met and agreed on a reconciled score.

The Perry scheme consists of nine successive interpretations or positions. Development is seen as being in two parts, centering on position 5, Relativism, in which the student interprets knowledge and values as relative, contingent and contextual. Preceding this position are views of knowledge beginning as dualistic absolutism, moving through multiplicity to contextual relativism. Perry[5] characterizes these three stages as follows:

> Dualism [Position 2]. *Division of meaning into two realms--Good versus Bad, Right versus Wrong, We versus They...Right Answers exist somewhere for every problem, and authorities know them...*
>
> Multiplicity [Positions 3, 4]. *Diversity of opinion and values is recognized as legitimate in areas where right answers are not yet known...No judgments can be made among [opinions] so "everyone has a right to his own opinion; none can be called wrong."*
>
> Relativism [Position 5]. *Diversity of opinion, values, and judgment derived from coherent sources, evidence, logic, systems, and patterns allowing for analysis and comparison. Some opinions may be found worthless, while there will remain matters about which reasonable people will reasonably disagree. Knowledge is qualitative, dependent on contexts.*

Following position 5, the individual develops through the process of making Commitments in a relativistic world. Our work concerns only positions 2 through 5, the positions in which undergraduates generally fall and which are evaluated by the MID.

STRATEGIES

In both classes the concept of intellectual development was explicitly addressed. Students were encouraged to engage actively in self-assessment of personality and intellectual process. Test instruments, journals, in- and out-of-class discussions, and specially designed assignments were used as vehicles for self-exploration. Results of the test instruments were explained and applied in class discussions and assignments. They thus became strategies to increase self awareness. We hypothesize that this process enhances intellectual development.

In both classes a brief review of the Perry model was given--though not until after the "pre" test had been given. We commented, when appropriate, on developmentally related processes, and we made use of the Perry results in our interactions with the students. However, to reduce the risk of contamination of the "post" results, we avoided any reference to the positions of individual students. A danger is, of course, that the positive value accorded to progression through the stages will be interpreted as value judgments of the individual students themselves. We attempted to minimize this effect by pointing out the strengths of the learning behaviors associated with the earlier positions when appropriate, and by giving examples of variations of individuals' effective Perry position in different learning environments. Nonetheless, students did inevitably try to assess their progress, and it may be that the explicit reference to the Perry model itself, though not to the developmental concepts, would be better avoided.

In both classes too we made extensive use of the Myers-Briggs Typology Inventory (MBTI),[9,10] a classification based on Jungian theory of personality. (In Compleat Wisdom," the Keirsey Temperament Sorter,[11] which is simpler and quicker to administer and which leads to the same classifications, was used rather than the MBTI.) The MBTI classifies individuals according to their preferences in their modes of perception--either through sensation (S) or intuition (N)--and in their modes of judgment or decision making--either by thinking (T) or feeling (F). The subject's preference for perception (P) or judgment (J) and for introversion (I) or extraversion (E) are also indicated. The result is one of sixteen four-letter types, e.g., INFP (for Introversion, iNtuition, Feeling, Perception), or ESTJ (for Extraversion, Sensation, Thinking, Judgment). It is stressed that the processes indicated are preferences, not the only process used by the individual, and there is no value judgment associated with any of the types. Type-based exercises and frequent observations of type-related behavior played an important role in the developmental process. Since most of the students were in the late dualistic or early multiplistic stages, some were at first unwilling to believe that the typology is not value-laden. Later, however, knowledge of the types of all class participants became an extremely valuable strategy for enhancing development through self and mutual understanding.

In "Compleat Wisdom" two additional instruments were used: Roy Heath's model of X, Y and Z temperaments, which are not value-laden and which lead developmentally to a common goal, the "Reasonable Adventurer,"[12] and Bem's Androgyny Scale.[13] Both seemed to have some value to students in relation to self awareness and as useful information for the instructors in combination with other data.

In both classes extensive use was made of journals. In "Compleat Wisdom" students were asked to write an entry relating to the reading or other material studied before the weekly class meeting and another entry after class. Both instructors read and responded to the journal entries weekly. In "Learning about Learning" all of us, both students and teachers, wrote in our journals on anything related to the work of the class. All class members, both students and teachers, read all the journals weekly and wrote comments and responses in them. An extensive series of dual and multiple interactions arose in the journals. The process was clearly illuminating for all of us.

At the beginning of the semester the students' MID protocols all fell, as would be expected, in the range of Perry positions 2, 3, and 4. Our general approach was to give support to students in the processes associated with their present position while at the same time challenging them in discussion and in assignments to move on to the next position--the "plus one" approach. We offered choices in assignments with different assignments appropriate for dualistic, multiplistic and relativistic thinkers. It seemed particularly important to offer intellectually challenging assignments, designed for the dualistic thinkers. In Perry position 2, and in transition to position 3, the student sees the instructor as an Authority from whom clear guidance is expected. Assignments, which may be quite complex, but which are highly and carefully structured, can stimulate responses of high quality. Alternative, less structured assignments are offered for the intellectually more developed student.

RESULTS

The results of the "pre" and "post" MID tests for Perry positions for the two classes are given in Tables I and II. A preliminary summary of these results has already been published,[14] and a detailed account of part of this work is given in a senior honors thesis by one of us.[15] Evaluations were made for a control class for comparison with the "Compleat Wisdom" results.[15] The control class was another freshman General Honors seminar, taught by a teacher with a similar style and educational

TABLE I

"Compleat Wisdom." Evaluation of students' positions on the Perry scale at the beginning and end of the semester

Student	Initial	Final	Increase
1	223	223	0
2	223(Retreat*)	223(Retreat)	0
3	223	334	+1
4	233	333	+1/3
5	233	333	+1/3
6	233	333	+1/3
7	233	334	+2/3
8	333	333	0
9	333	333	0
10	333	333	0
11	333	344	+2/3
12	333	344	+2/3
13	333	444	+1
14	334	444	+2/3
15	444(Escape*)	444	0
16	445	445	0
Mean	2.98	3.31	+0.33

*Note: Perry characterizes "retreat" and "escape" as follows:

Escape - Alienation, abandonment of responsibility. Exploitation of multiplicity and relativeness for avoidance of Commitment.
Retreat- Avoidance of complexity and ambivalence by regression to dualism colored by hatred of others.

TABLE II

"Learning about learning." Evaluation of students' positions on the Perry scale at the beginning and end of the semester.

Student*	Initial	Final	Increase
1	333	344	+2/3
[2	-	444	]
3	333	455	+1 2/3
4	233	333	+1/3
5	333	334	+1/3
6	333	333	0
7	334	333	-1/3*
8	223	334	+1
9	233	334	+2/3
[10	333	-	]
11	333	334	+1/3
Mean(excluding 2 and 10)	2.89	3.41	+0.52

* Careful study indicates that this student did not regress. The result is, however, included in the averaging since there may well be positive artefacts in other cases.

NOTE: Scores are reported as three numbers which indicate a dominant position and a possible transition to or from that position. For instance, a score of 333 indicates a protocol with the characteristics of stability at Position 3; 233 indicates a transition into Position 3 with some remnants of Position 2, 334 indicates a beginning transition from Position 3 to Position 4. In numerical averaging 233 is counted as 2.67; 334 is counted as 3.33.

values, and accurately matched with respect to sex, age and ethnic distribution, and distribution of students' majors. In this class, however, there was no explicit concern with developmental process or with personality type. The observed progress of the students in this class along the Perry scale was considerably less than in "Compleat Wisdom," but the results are not included here; they are suspect because of the possibility of reduced motivation and seriousness of the students in taking the "post" test. It is more valid to compare the results with the average progress of undergraduate students without developmentally oriented intervention, which is, based on extensive observations, an average movement of one position or a little more in the three years between the freshman to senior years.[16] While the number of students in this study is small, the results do clearly suggest that paying explicit attention to developmental considerations in the ways described does indeed succeed in fostering intellectual development, confirming our strong subjective judgments based on our experience in these and other courses.

DISCUSSION

It is important not to fall into the trap of post hoc ergo propter hoc--the students did not spend all of their time in our seminars!--and it is difficult to determine which elements in an inevitably complex system of multiple strategies were effective. We can, however, get some indications from close study of the students' written work, particularly the journals, and comments made in class and in an extensive series of post-class interviews conducted by NBP.

The course descriptions written by the instructors are clear invitations to late multiplicity (Perry position 4), as indeed is the seminar format itself, with its encouragement of the expression of multiple viewpoints without necessarily stressing the relativistic process of careful analytical intercomparison. This is shown clearly in students' comments:

> *After taking the course, I think I have considerably broadened my perspectives. All through high school, I lived in a secure black and white world, where there was only right and wrong. At that time it was easier to live in that conservative*

> *way because I encountered only a handful of people that ever questioned my values. But it was only after coming here that I was faced with a multitude of different views. I was bombarded with questions that now had to be answered out of necessity.*
>
> *I see that there's no certainty. [This realization] came slowly. Little things building up slowly, and I realize it's not always going to work out the way I thought it would.*

Our encouragement of late multiplicity (position 4) rather than the more advanced stage of relativism (position 5) is illustrated in the following comment from a student whose protocol was evaluated as 445, that is, already on the way to relativism:

> *What I learned from these journal responses is that my differences are not bad or wrong--just different.*

Our attempts to inject relativistic process, for example in suggesting a comparative, analytical approach to aesthetic value judgments, were frequently met with hostility or avoidance. The class was generally unwilling to consider, let alone agree or disagree with, statements like "Wolfgang Amadeus Mozart was a better composer than his father, Leopold Mozart." Escape here took the form of classifying statements as either "fact" or "just opinion."

In the case of one student who started and ended the semester in position 223 (Retreat), our attempts to encourage multiplicity failed completely:

> *Where people might say "this is not all the way Right; it might be Right; it might be Wrong; who am I to say?", I would say "Definitely Right; Definitely Wrong." Where you would say there's grey areas, I would say there's black and white.*

and *"I don't see any confusion in my life except possibly in trivial matters."* This student acknowledges that other people see gray areas, but retreats by refusing to accomodate this dissonant stimulus. Clearly we did not provide him with the necessary support in his dualism to prepare him for the next step.

In most cases, however, there is a clearly visible progression from dualism to multiplicity and, occasionally, a glimpse of a relativistic approach. One student, initially rated at 233, says:

> *...I think now, instead of blind trust and faith, as my earlier journal entries implied, I can question a little better the issues that surround me.*

> *I still have doubts about my faith, but I am more willing to thoroughly investigate my feelings before refuting an idea.*

There was, of course, some lack of understanding of the concepts and of the necessity to progress through the Perry stages, as illustrated in this naive and wistful comment:

> *If you know how to get [to position 9], then why don't you just get there? Why don't they just teach this scheme in elementary school?*

Progress along the developmental scale is seen in the changes in students' attitudes to the test instruments. There was some resistance, initially at least, and some skepticism about their value. This usually was resolved during the course of the semester. A student wrote about the MBTI in her journal:

> *I did not like...taking the test. I do not see how any of those questions can be valid or reliable in determining personality, as each question, in my opinion, could be answered differently depending on...what the circumstances were.*

A week later she had changed her mind:

> *I was surprised and pleased to find how accurate the Myers-Briggs...tests were in determining personality types...I guess that the great thing...was that you're not trying to find fault with different personality types but...only trying to learn and accept the different types of individuals for what they are.*

Another student, who had been irritated with the MBTI and highly critical of it, announced one day in class:

> *This may be very obvious, but I have learned something from it [the MBTI]. I used to think that, even if I couldn't do it, to live by the Golden Rule was a good thing to aim at, but now I see it isn't as simple as that. The other person might not want me to treat him the way that I would like to be treated.*

CONCLUSION

It seems clear, both from our detailed observations of individual students and from the quantitative results, that the strategies we have employed, the careful attention to students' developmental stages, the use of instruments to enhance self and mutual awareness and understanding, and the design of exercises and assignments to provide appropriate support and challenge, do indeed foster intellectual growth.

FOOTNOTES

1. Paul Tillich, quoted in George Isaac Brown, *Human Teaching for Human Learning*, (1971; rpt. Harmondsworth: Penguin, 1977), pp. 15-16.

2. The title is, of course, somewhat facetious. "Compleat" is an oblique reference to Isaak Walton's *The Compleat Angler*, 1653.

3. This course was developed under a grant from the Fund for the Improvement of Post-Secondary Education on "General Education and Experiential Learning." A fuller description of the group dynamics of this seminar will be published elsewhere.

4. William G. Perry, Jr., *Forms of Intellectual and Ethical Development in the College Years: A Scheme*, (New York: Holt, Rinehart & Winston, 1970).

5. William G. Perry, Jr., "Cognitive and Ethical Growth: The Making of Meaning," in Arthur W. Chickering and Associates, *The Modern American College*, (San Francisco: Jossey-Bass, 1981), pp. 76-116.

6. L. Lee Knefelkamp, "Developmental Instruction: Fostering Intellectual and Personal Growth in College Students," Unpublished doctoral dissertation, University of Minnesota, 1974.

7. Carole Widick, "An Evaluation of Developmental Instruction in the University Setting," Unpublished doctoral dissertation, University of Minnesota, 1975.

8. William S. Moore, "The Measure of Intellectual Development: A Brief Review," Center for Application of Developmental Instruction, University of Maryland, 1982.

9. Isabel Briggs Myers, *Introduction to Type*, 3rd ed. (Palo Alto: Consulting Psychologists Press, 1976).

10. Isabel Briggs Myers with Peter B. Myers, *Gifts Differing* (Palo Alto: Consulting Psychologists Press, 1980).

11. David Keirsey and Marilyn Bates, *Please Understand Me*, 3rd ed. (Del Mar: Prometheus Nemesis, 1978).

12. Roy Heath, *The Reasonable Adventurer* (Pittsburgh: University of Pittsburgh Press, 1964).

13. Sandra Bem, "The Measurement of Psychology Androgyny," *Journal of Consulting and Clinical Psychology*, 42, 155-162, 1974.

14. John L. Howarth, "Extradisciplinarity," *Forum for Honors*, 14, No. 4 (Summer 1983): 1-4, 26.

15. Nancy B. Pearl, "The Encouragement of Cognitive Development in College Honors Students," Unpublished senior honors thesis, University of Maryland, 1982.

16. L. Lee Knefelkamp, Personal communication, 1982.

RESTRUCTURING THE LECTURE TO FIT INDIVIDUAL LEARNING STYLES

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When one studies the individualizing that is done to prepare the cast of a play to get a production ready, it is surprising to view the **correlations** with teaching college and university students. In the classroom, we have the stock types and the main leads. The students, like actors and actresses, are playing different roles in the classroom by the very nature of their learning preferences that they portray for the instructor. Some students look for meaning to justify everything that is said in done within the classroom; others analyze everything to figure things out; a third group of students demand the use of common sense activities, and finally another group of students seek alternatives to the assignments and activities in order to do things their own way.

The Correlation

The play is the arena in which the cast and actors teach a lesson or provide us with emotional scenes to either motivate or enable us to feel. Likewise our "play" is that of weaving subject matter and students together to foster learning experiences that will leave a lasting impact upon our students. The director of the musical charters out a contract with the audience of the play by captivating them with rhythms of people, plot, and performance all directed at entertaining. In our role as the "director" of the classroom, our similar responsibility is that of control of college coed, curricula, and classroom criteria. Finally, the all important script is necessary to inform the actors and actresses of their role to play and what they must do to perform in the specified manner of the playwright. In higher education, the "scripts" that are used often fall apart with lack of clarity, objectives, and specificity. Such scripts as the lecture are poorly prepared and articulate the past and not the future. These scripts look like old file notes rather than recent outlines to guide students. A new form of script that will be discussed in this article is the Feedback Lecture. This form of teaching actually matches teaching and learning styles by providing for the cast, play, and the director, and most importantly individualizing the lecture for college and university students. The discussion that follows, presents the possible cast in a higher education classroom, the types of plays that are presented within the classroom, the director at large, and a format or script (Feedback Lecture) that can be used in orchestrating a better performance on and off stage.

CAST

When we examine the characters that we see in the theatre, before us we see lifestyles and philosophy, LEARNING STYLES, and much more. For example, we can see the left and right brain hemisphere connections in the characters of Daddy Warbucks and Annie. Daddy Warbucks representing a left brain dominant person heavy into rationale thought, structure, sequence, systems, analysis, controlled feeling, and intellectual in nature. Warbucks will see the "trees" in the forest. Higher education is for the left brain students; they dwell in the academic atmosphere. Annie is right brain oriented. She does visual-spatial things; she likes random patterns; she sees the forest, and she is fluid and spontaneous. Annie's see patterns and tends to solve problems by looking at the whole picture. For Annie, she arrives at accurate conclusions in the absence of logical justification, she is intuitive in nature. Higher education doesn't provide for the Annie's. How sad for students who are right brain oriented. In our own casts that we see in the classroom, we can see the Daddy Warbucks and the Annie types of students. Their characteristics are as follows:

Daddy Warbucks (Left Brain)	Annie (Right Brain)
- remembers names	- remembers faces
- prefers verbal instructions	- prefers illustrations
- breaks problems into parts	- sees the whole problem
- makes objective judgements	- makes subjective judgements
- analytic student	- synthesizing student
- reliance on language	- reliance on images
- talks and writes	- draws and manipulates
- multiple choice tests	- open-ended questions
- controlled feelings	- free with feelings
- logical	- intuitive

Adding to these characteristics is another dimension to our "cast". With the above, we have a clear distinction of separate and dominant brain activity. Beyond this left and right brain functioning is a typology of castings. Four separate living and learning types can be recognized in the theatre. These same types are evident in our classrooms; however, we usually teach to one of the four types of learners. In his book, (1) Carl Jung explored the differences in the way people perceive and process information. He defined four categories: Feelers, Thinkers, Sensors, and Intuitors. **Feelers** transfer value from themselves to what they experience. Thus they validate what happens to them and what they perceive in accord with emotions, and not in accord with intellect. **Thinkers** are more classically rational. They engage in direct thinking. They arrange what happens and what they perceive into rational categories. **Sensors** perceive consciously, but beyond reason. They apprehend the world by what they sense, see, know, feel, smell, and reason. They do whatever, without a sense of control (they are beyond reason). Intuitors are the reverse of sensors. They impose control on perceptions, but unconsciously. Intuitors understand what they see, and feel in a whole and complete way. They apprehend instinctively (they can be in harmony with reason). Let's look at the characters from the musicals for instance and use them to help us identify the different learners within the classroom.

Eliza Doolittle (Type one, a Feeler)

"All I want is a room somewhere, far away from the cold night air; with one enormous chair...Oh, wouldn't it be loverly?" (2) These lines from My Fair Lady show us that Eliza is all heart; she is moved by what Jung says that she experiences. Her performance is motivated by the special treatment of Professor Higgins. In the classroom, the Eliza's that we "experience" seek personal meaning and make judgements based on whether things are valuable. They like to function through social interaction with goals of self-involvement in important issues. Their lifestyle is that of cooperation and sociability. They prefer the discussion method of learning. They are most impressed with authority, and they model behavior of those they respect. Hotlips and Frank from the MASH series are further examples of the Type one learners. Bernice McCarthy describes this group in her text (3) as "Innovative Learners". She writes that they "seek meaning; need to be involved personally, learn by listening and sharing ideas; interested in people and culture; their strength is in innovation and imagination; they are idea people, their goals are self-involvement in important issues, bringing unity to diversity, and their favorite questions are "Why or why not?" They like careers in counseling, personnel, humanities, and organizational development."

Henry Higgins (Type two, a Thinker)

"Why can't a woman be more like a man?" From the same play, My Fair Lady, we see a different character emerge. Henry is all thinking, all knowing, and bound by winning. He sees the black and the white, but misses the in between. Henry is constantly thinking and analyzing, reading and absorbing, and practicing his intellect upon other lesser skilled individuals. He thrives in school; he adores the details and is challenged to know it all. Jung views type two individuals as people who rationally organize everything. McCarthy describes this group as "Analytic Learners". They seek facts. Additionally, they need to know what the experts think. Type two learners learn by thinking through ideas. Like Henry Higgins, they are less interested in people than ideas and concepts; they critique information and are data collectors. Type two people enjoy traditional classrooms; lectures are very appealing to them. Schools are designed for them. Their strength is creating concepts and models. For goals they seek self-satisfaction and intellectual recognition. They have a favorite question: "What?" For careers, they enjoy basic sciences, math, research, and planning.

Gypsy Rose Lee (Type three, a Sensor)

In the musical Gypsy, Rose juggles everything and everyone around. She finds the shortest route to getting things done. She only takes off (strips) what is necessary, yet makes the best of it. Behind the scenes, she is a real task person by providing order out of disorder. In our classes, these type of students are like General Patton; they are all "blood and guts". Jung sees them as ignoring theory and seeking application by getting the job done. McCarthy finds this group to be "Common Sense Learners". She feels that they seek usability by needing to know how things work. Type three learners learn by testing theories in ways that seem sensible. They use factual data to build designed concepts. They need hands-on experiences; they enjoy solving problems and resent being given answers. They need to know how things work, and have limited tolerance for fuzzy ideas. Their strength is in practical application of ideas. For goals, they like to bring their view of present into line with future security. They like to ask, "How does this work?" Type three enjoy careers in engineering, physical sciences, nursing, technicians, administrative assistants, and problem-solving jobs.

Harold Hill (Type four, an Intuitor)

"Ya got Trouble (Oh we've got Trouble) Right here in River City! (Right here in River City!) With a capital T and rhymes with P and that stands for Pool. (That stands for Pool!)..."(4) Harold Hill, the music man from The Music Man, finesses his audience into believing that they really do have problems. The solution is buying musical instruments and uniforms. He also convinces the students that they can play by feeling the notes. In the classroom, the type four learners seek alternatives. They get bored with one approach. Jung describes them as apprehending instinctively. They will have the right answer without being able to explain it to anyone how they got the answer. McCarthy views type fours as "Dynamic Learners". They are risk takers. Fours seek hidden possibilities. They need to now what can be done with things. Obviously, they learn by trial-and-error, self discovery. The Harold Hill's of the classrooms adapt to change and relish it; they like variety and excel in situations calling for flexibility. They are at ease with people, but sometimes seen as pushy. Their strength is in action, carrying out plans. For goals, they like to make things happen, to bring action to concepts. As a favorite question, they ask,"What can this become, or _If_?" They enjoy careers in marketing. sales, action-oriented managerial jobs, and leading workshops and seminars.

PLAY

The experience of the play is watching characters acting and reacting to contrived situations. When the antagonists and protagonists get together, sparks fly in all directions. The plot of the play enables the characters to make decisions and to choose appropriately or not. In the classroom, students are given choices, but few in nature. The usual scene in higher education is that of students taking directions, writing papers, taking tests, recording notes and repeating back messages sent to them. Unfortunately, this is all too true for the plays acted out in the colleges and universities. What we really need in higher education is four modes of teaching taught to the four types of learners in the class setting. All students should experience equally all of the four learning styles. As the four learning types can be placed into distinct quadrants, a natural progression from type one to type four can be taught in-and out-of sequence in order to provide for all learner types. The teacher can provide for the needs of each of the learner types by "teaching around the wheel and allowing each type to shine a quarter of the time." Students need to progress by developing skills from the other learner types. Even though the skills may not come naturally, they will refine their skills in their own preference areas as well as enhancing skills in the other three types. Students will become more balanced and be able to function for different parts in the real play of life.

THE DIRECTOR

The director of a play has a very powerful role in sculpting the characters into instruments to convey a message. As a director, this person is the teacher selecting an appropriate style to get the message across to the actors and actresses by directing them to learn their roles. Within a play, there are directors (actors) who also serve as teachers. Harold Hill's (The Music Man) spell binder methods of teaching tone deaf boys and girls music by making them believe in themselves is a sample of type four teaching style with all the dynamic energy used by Hill to manipulate his students. Henry Higgin's use of an analytical teaching style and Eliza's need for meaning and self-involvement provide a classical example of a type two teaching style educating a type one pupil. What we need at every level of education is directors of students (teachers) who have the ability to use all four teaching styles and methods upon their students. We need to provide at least opportunities for all types of students: innovative, analytical, common-sense, and dynamic learners to allow them to each "blow their own horn" upon the classroom stage. To do this we must, like the director of a play, redesign our thinking by recognizing the learners' needs and styles, and review appropriate teaching methods that engage and accommodate different students. As a director would need to know how they (the cast) tick, it helps to know the students and our own learning style. We may be in conflict with other learning types for lack of knowing other learning styles and preferences. We may not know their (students') orientation to life is different from our own in terms of how they process, perceive, and use information. When the director of the play teaches, the director must be sensitive to assess the cast. We as teachers in higher education can use instruments to assess the student group that we are guiding. Such instruments as Joseph Hill's Cognitive Mapping (5) and Bernice McCarthy's 4Mat Learning Style System Test (6) can be directed to the students in order to diagnose learning types within the classroom. Students should know where they are coming from in terms of their preferred learning style. This information will help the student want to gain experiences in discussion, information, demonstration, and self-discovery methods with more balance and concern for their complete development. Teaching methods can accommodate for these four learning types discussed under the CAST section. One teaching method (Feedback Lecture) (7) is designed to teach around the wheel allowing each of the four types to learn by their preferred learning method and also to experience the other three teaching and learning methods.

The course that the director of a play takes to enable the cast to perform is a responsibility shared by teachers in higher education. We have the job of enabling our cast to perform at their best.

SCRIPT

In the theatre, the all important script guides everyone by providing the clues, directions, objectives, materials to be learned, inspiration, music, and complete information to absorb by the cast and crew. In higher education, teaching methods can and should be the scripts that guide our cast. One teaching method developed at Oregon State University enables teaching and learning to harmonize by individualizing the lecture for learners in higher education. The Feedback Lecture (8) teaches around the wheel to each of the four different learner types. It works like this: the Feedback Lecture is designed to guide the four learner types through a lecture delivery process. Students perform well when these guided-learning activities are used prior to, during , and after the lecture. Every lecture using this format is managed by a feedback lecture study guide that prepares the students for learning before the actual lecture by suggesting specific methods and procedures to study. The study guide contains a pretest, a suggested procedure for studying, an objectives page, and advanced terminology page, visuals, and an introductory theme page that provides an inspiration for getting a head start on the lecture. Students are guided in the lecture by a set of notes in outline form in the study guides. The instructor completes the first half of the lecture (based on a 50-60 minute period) in 20 minutes, then allows students to discuss an open-ended question(s) in groups of two and turn in their response sheets after 5-8 minutes. The instructor circulates among the various groups during this period and responds to any questions that arise. As the students turn in their response sheets, they are provided with an appropriate answer to the discussion question(s). In most cases, an adequate response to the question(s) provides points for the student towards the final grade.

The second half of the lecture then begins, and students are again guided by notes. Questions raised by the instructor during this second half may provide further feedback in determining whether students are learning the material. Post-lecture activities are designated in the study guides and provide a bridge between this completed lecture and the next.

Increased student involvement using the Feedback Lecture format demonstrates that lectures can be more active and assignments can be tailor-made for each of the four types of learners. It is possible to blend innovative instructional techniques, like a director orchestrating a play, in a lecture format that meet the needs of today's students. The following quadrant demonstrates the components of the Feedback Lecture in reaching each of the four learner types.

FEEDBACK LECTURE: Combining Teaching and Learning Styles

CREATIVE LEARNERS

PRE & POST LECTURE	4Type Learner(dynamic,intuitor)	1Type Learner(innovative, feeler)	IN CLASS ACTIVITY
	Individual session	Discussion session	
	pre and post tests	meaningful applications	
	motivation activities	one-on-one discussions	
	guided challenges	instructor circulates	
	alternatives provided	reward for interacting	
	3Type Learner(common sense, sensor)	2Type Learner(analytical, thinker)	
	Direction Session	Lecture Session	
	coaching provided	20 minutes of information	
	5-8 minute problem-solving	traditional activities	
	objectives, procedures	20 minutes of information	

---INTELLECTUAL LEARNERS---

In like a cast, play, director, and script must all work together, we in higher education must do the same by providing individualizing the lecture for today's students. The diagram illustrates the provisions for the different learner types in using the Feedback Lecture. In accommodating the squares and the peg's, the Daddy Warbucks and the Annie's, the Henry and Eliza's and using principles of the Music Man in helping students realize that their learning style may be different than others, but most acceptable, we will be individualizing our lecture approach to satisfy the different learning preferences within the classroom. By teaching and directing around the wheel, or quadrant, we will provide the "best act in town."

References

1. Jung, Carl G., Psychological Types, New Jersey: Princeton University Press. 1976.

2. Lerner, Alan Jay, My Fair Lady. New York: Cowan - McCann, Inc. 1956.

3. McCarthy, Bernice, The 4Mat System. Illinois: EXCEL, Inc. 1981.

4. Willson, Meredith, The Music Man. New York: G. P. Putnam's Sons. 1957.

5. Mt. View College. Implementing a Cognitive Style Program. Dallas: Mt. View College. 1978.

6. McCarthy, Bernice. Learning Style Inventory. Illinois: EXCEL, Inc. 1981.

7. Osterman, Dean N., Feedback Lecture: The Process & Components. Instructional Development Office, Oregon State University, Corvallis, Oregon, 97331. 1980

8. Osterman, Dean N., "Classroom Lecture Management: Increasing Individual Involvement and Learning in the Lecture Style." Washington D. C. Journal of College and Science Teaching.

FOCUSING ON STUDENT LEARNING: COGNITIVE PSYCHOLOGICAL ASSESSMENT IN COLLEGE TEACHING

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In recent years, a good deal of concern has been expressed over the need to improve university instruction. But by primarily focusing on the teaching process, we may be overlooking the most important instructional component--the learning process. Teaching is essentially a means to an end which is student learning. The act of teaching is the creation of a set of external events whose purpose is to promote the internal processing and retention of knowledge and skills by the learner. Thus, we cannot really attempt to effectively change the teaching process without first understanding the complex processes of learning which takes place within college students.

When attempting to improve teaching in higher education, instructional designers and faculty members have often concentrated on changing teaching behaviors, or restructuring the content and instructional activities of a particular college course. The student as a learner is often the most ignored component in the whole instructional process. Of course, there is the usual obligatory rhetoric that good college instruction should be student centered. But many individuals, who are sincerely trying to improve college instruction, still only pay lip service to this vague concept of student centered education. Even instructional developers in higher education, who are advocates of individualized instruction, are usually more concerned about the step by step procedures to produce instructional materials than they are in assessing the unique intellectual skills and cognitive knowledge that students bring to the learning situation. Although most instructional design models have a learner's assessment component, a sophisticated analysis of the student's cognitive abilities and prior knowledge is rarely emphasized.

But why is such a sophisticated analysis of students' characteristics and intellectual abilities so important for effective college teaching? Recent psychological research indicates that a strong correlation exists between the intellectual skills and cognitive structure already possessed by an individual and his ability to learn new material (Anderson, 1978; Bransford, 1978; Bransford and Johnson, 1972; Mandler and Johnson, 1977; Rumelhart and Ortony, 1977). From this research it is clear that "the most powerful predictor of ability to learn new material is the degree of relationship between inherent content structure, the nature of an individual's prior knowledge, and the way in which new material is initially presented via instructional materials" (Wildman, 1981, p. 14). At the university level, a good deal of preparation for teaching is focused only on the first component of this relationship--the inherent content structure of the subject matter. Little time is spent on assessing the students' prior knowledge in the subject or on developing instructional materials and teaching techniques which would facilitate the learning of the subject matter by closing the gap between the present states of the students' knowledge and the desired state of advanced knowledge in the specific academic discipline. Thus before effective teaching strategies can be developed, the college instructor should be able, at least, to assess her students' knowledge level in the subject area and if possible to estimate the range of her students' relevant intellectual skills.

But a sophisticated learner analysis involves more than giving a simple pre-test to determine those facts which the students have stored in their long term memories. A solid understanding of how college students learn is also essential. This important knowledge of the human learning process can only help instructors and instructional designers maximize the learning among the students. Fortunately for us, cognitive psychologists, through their empirically-based research, have recently expanded our knowledge horizons regarding the complex workings of the mind.

Cognitive psychology has the greatest potential for producing a cohesive and reliable theory of learning by which to guide educators, especially those in higher education, in making sound instructional decisions. Cognitive psychology has been defined as "a scientific analysis of human mental processes and memory structures in order to understand human behavior" (Mayer, 1981, p. 1). The major focus of the cognitive perspective is on the more complex internal mental processes such as critical thinking and problem solving which are intellectual skills that institutions of higher education are attempting to instill in their students. Cognitive psychological research and the corresponding models of learning can give us important insights into how humans perceive, process, store, retrieve and utilize information. Such cognitive insights can help college educators to formulate sound instructional strategies for their students.

Research in the related field of developmental psychology has also produced important findings which can be effectively utilized by college instructors and instructional designers when analyzing the intellectual capabilities of the students. Developmental psychologists like Jean Piaget have studied "the maturation of inborn patterns of thought" through contact with "discrete learning experiences" and the corresponding "dialectic interaction of the organism and environment" (Rastovac, 1982, p. 35). For too long there has been a misconception that Piaget's theory of intellectual development had little relevance for learners in higher education. Research suggests just the opposite. The Piagetian analysis of how humans progress through sequential stages of cognitive development is crucial for understanding why some students are capable of abstract reasoning and other sophisticated intellectual skills while others are not. Recent studies (Berzonsky, 1978; Broughton, 1977; Kuhn, 1979; Labouvie-Vief, 1980; Moshman, 1980) have indicated that a majority of undergraduates when entering college are not critical thinkers and have limited ability to reason abstractly, which in Piagetian terms means the students have not made the crucial transition from the stage of concrete operations to the stage of formal operations. There now appears to be instructional strategies to help facilitate this critical transition for college age learners (Fuller, 1980).

Before devising instructional strategies for the college classroom, the instructor naturally should attempt to assess the audience for which the instruction is intended. And it is important that this assessment of the students should be done in the context of recent psychological research and learning theory development.

Cognitive psychologists have found that a major factor which is productive of human learning is the quantity and quality of the knowledge that a student brings to a learning situation. Thus, those students who have a well developed cognitive structure or internal schema (Anderson, Spiro and Montague, 1977; Anderson, 1978) in a particular subject area are most likely to quickly assimilate the new information into their memory structures. The likelihood of new data being successfully stored and then easily retrieved is increased when the new information is meaningful to the student due to her prior contact with similar context material. Often, learning will not take place simply because the new information has no meaningful relationship to the learner's present cognitive structure. Essentially there are no appropriate hooks in the mind on which to hang the new information; thus the information is lost to the learner. New knowledge, which might have been correctly presented by a college instructor, can also be easily distorted in the mind of a student who has an inadequately developed or erroneously constructed schema in a specific content area (Norman, 1980). Those learners, who lack an accurate and well-organized internal body of knowledge (i.e. cognitive schema), are often forced to distort and illogically rearrange incoming information to the mind in order to make the new knowledge fit their old erroneous schemas. Naturally, inaccurate classroom performance will result from such faulty information processing.

These findings underscore how important the step of assessing the prior knowledge acquisition of the learner is in any instructional design plan. Once this assessment has been made through pre-tests, questionnaires and class discussions, instructors can take concrete action to shape up their learners' cognitive structures so to prepare them for the bulk of the course content. Instructional strategies such as providing advance organizers (Ausubel, 1960; Mayer, 1979), elaborated content outlines (Reigeluth, 1979), and conceptual models (Norman, 1980) can help give the learner the necessary cognitive foundation upon which to build. Such teaching strategies can be vital links between the instruction and the cognitive structures of individual college students, because they not only direct the students' attention to important and overarching concepts of the instructional unit but also provide the learners with an accurate and well-organized cognitive framework by which to easily assimilate the new information.

The human mind is more than just content structure. It also consists of intellectual processes which allow us to think critically, reason abstractly and problem solve. These metacognitive processes are essentially executive control mechanisms which monitor and direct our attempts at learning by helping us encode, store and finally utilize, often in complex ways, the knowledge that is embedded in our cognitive structures. Cognitive psychologists (Brown, 1978; Flavell, 1979) have concluded that the best learners are those who understand their own attempts at learning and, thus can control and effectively direct their mental processes.

Both the college instructor and the instructional designer should make an attempt at understanding what intellectual skills the students bring into the learning situation and then train them to consciously develop those metacognitive skills which are needed in those specific subject areas under study. As Bovy (1981) perceptively pointed out, "the success or failure of individual learners depends to a great extent on whether they can successfully apply previously acquired cognitive skills to solve specific learning tasks" (p. 206). College instructors, too often, incorrectly assume that their students already have the necessary metacognitive skills to perform complex intellectual tasks with the facts and concepts that are taught in class. For example, a student in an American history survey course may learn, through lectures and readings, the chronology and major trends of the Progressive Era. But when asked on an essay test to give a logical and substantial explanation for the rise of Progressivism during the first two decades of the twentieth century, he may be unable to satisfactorily answer such a high order question because he lacks the metacognitive skill of historical analysis which would allow him to find a logical relationship between the events and trends of the era and a possible historical interpretation for the Progressive movement. Like most intellectual skills, historical analysis can be taught in the college classroom.

The development of self-regulatory capabilities has also been at the center of Piagetian research on college age learners. As previously stated, current developmental research suggests that many college students are not at the formal operations stage of intellectual development, and thus have problems with the self-regulation of their own learning processes. The lack of developmental-related metacognitive skills often prevents college students from adequately dealing "with abstract relationships, hypothetical situations and theoretical ideas" (Mellon and Sass, 1981, p. 29).

The task of assessing the developmental stage of a student's intellectual capabilities might also be included in the learner analysis process. Interview techniques and other diagnostic tools (Carpenter, 1980) have been developed for the assessment of formal operation capabilities among college students. After such Piagetian-based assessment, the next step is to devise instructional strategies which will help the students to perform the more complex intellectual operations. Brown's research (1978) suggests that a developmentally based technology of instruction is possible. College educators, who are followers of the ADAPT program out of the University of Nebraska (Fuller, 1980) are also convinced that the practical application of Piagetian principles to college instruction can result in more intellectually sophisticated learners.

From recent psychological research, it is clear that effective college instruction must take into careful consideration individual learners' information processing structures and skills. The college student and her past learning experiences should be the central focus of much of the instructional planning at the university. By understanding the knowledge base and intellectual skills possessed by their students, college professors can more effectively develop teaching strategies which will facilitate and accelerate the learning process at their institutions.

Bibliography

Anderson, R. C. Schema directed processes in language comprehension. In A. M. Lesgold, J. W. Pellegrino, S. D. Fokema, and R. Glaser (Eds.), *Cognitive psychology and instruction*. New York: Plenum, 1978.

Anderson, R. C., Spiro, R. J. and Montague, W. E. (Eds.). *Schooling and the acquisition of knowledge*. Hillsdale, N.J.: Erlbaum, 1977.

Ausubel, D. P. The use of advance organizers in learning and retention of meaningful verbal material. *Journal of Educational Psychology*, 1960, 51, 267-272.

BErzonsky, M. D. Formal reasoning in adolescence: An alternative view. *Adolescence*, 1978, 13, 279-90.

Bovy, R. C. Successful instructional methods: A cognitive information processing approach. *Educational Communication and Technology: A Journal of Theory, Research and Development*, 1981, 4, 203-17.

Bransford, J. D. *Human Cognition*. Belmont, California: Wadsworth, 1979.

Bransford, J. D. and Johnson, M. K. Contextual prerequisites for understanding: Some investigations of comprehension and recall. *Journal of Verbal Learning and Verbal Behavior*, 1972, 11, 717-726.

Broughton, J. Beyond formal operations: Theoretical thought in adolescence. *Teachers College Record*, 1977, 79, 87-97.

Brown, A. L. Knowing when, where, and how to remember: A problem of metacognition. In R. Glaser (Ed.), *Advances in instructional psychology, vol. 1*. Hillsdale, N.J.: Erlbaum, 1978.

Flavell, J. H. Metacognition and cognitive monitoring: A new area of cognitive developmental inquiry. *American Psychologist*, 1979, 34(10), 906-11.

Fuller, R. G. (Ed.). *Piagetian Programs in Higher Education*. Lincoln, Nebraska: ADAPT-University of Nebraska, 1980.

Kuhn, D. The significance of Piaget's formal operations stage in education. *Journal of Education*, 1979, 161, 34-50.

Lavouvie-Vief, G. Beyond formal operation: Uses and limits of pure logic in life-span development. *Human Development*, 1980, 23, 141-61.

Mandler, J. M. and Johnson, N. S. Remembrance of things past: Story structure and recall. *Cognitive Psychology*, 1977, 9, 111-51.

Mayer, R. E. Can advance organizers influence meaningful learning? *Review of Educational Research*, 1979, 49, 371-83.

Mayer, R. E. *The promise of cognitive psychology*. San Francisco: W. H. Freeman and Co., 1981.

Mellon, C. A. and Sass, E. Perry and Piaget: Theoretical framework for effective college course development. *Educational Technology*, 1981, 5, 29-33.

Moshman, D. Piaget's theory and college teaching. In R. G. Fuller (Ed.), *Piagetian programs in higher education*. Lincoln, Nebraska: ADAPT-University of Nebraska, 1980.

Norman, D. A. What goes on in the mind of the learner. In W. J. McKeachie (Ed.), *New directions for teaching and learning: Learning, cognition and college teaching*. San Francisco: Jossey-Bass, 1980.

Rastovac, J. Cognitive and moral development: Living through the developmental stages. In J. D. Barry (Ed.), *Ethics on a Catholic university campus*. Chicago: Loyola University Press, 1982.

Reigeluth, C. M. In search of a better way to organize instruction: The elaboration theory. *Journal of Instructional Development*, 1979, 2(3), 8-15.

Rumelhart, D. E. and Ortony, A. The representation of knowledge in memory. In R. C. Anderson, R. J. Spiro, and W. E. Montague (Eds.), *Schooling and the acquisition of knowledge*. Hillsdale, N.J.: Erlbaum, 1977.

Wildman, T. M. Cognitive theory and the design of instruction. *Educational Technology*, 1981, 7, 14-20.

DEVELOPING FACULTY AS TEACHERS II

FRIDAY, 6 JULY

1630 - 1800

EVALUATION OF INSTRUCTION AT THE ACADEMIC CENTER FOR IN-SERVICE TRAINING OF TEACHERS

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In-service training of teachers has existed for decades. Teaching, by its nature, demands that the instructors develop and up-date themselves. There are two main categories to the development. The first is the discipline in which the teacher specializes, namely the subject he teaches. The second is methods of instruction. The Center for In-service Training offers courses in both categories. Each course is composed of different subject matter.

With the growing tendency to evaluate instruction in all educational domains, we were asked to prepare a questionnaire evaluating in-service training courses. The aim was to evaluate in-service training as a whole rather than each individual subject or instructor. The purpose of this evaluation was to examine to what extent the courses fulfilled teachers' needs and expectations. When financial resources are limited, the question of accountability arises most severely, since only highly efficient activities and institutions are granted public support. We had to construct an instrument for evaluation of teaching, then to examine its reliability and validity. The stages of the assignment were constructing the questionnaire, administering it to the teachers, then examining its reliability and validity using different statistical devices.

The Questionnaire

The items of the questionnaire were gathered through interviews with officials of the Center for In-service Training, some instructors giving different courses and some of the teachers taking them. The final questionnaire is composed of eighteen items relating to several dimensions: methods of instruction in the courses, the training's contribution to the participant's scholarship and the administrative organization of the training. An open question was added, in which the participants were asked to comment on issues not dealt with in the questionnaire itself.

Population

The questionnaire was administered to teachers taking the in-service training course between June and August, 1983. Three hundred and two teachers in twenty different courses filled in the questionnaire. Most of them are Junior High School and Senior High School teachers, whose average experience in teaching is about fourteen years. In fact, two different types of in-service training courses were evaluated. One lasted throughout 1983 (232 teachers in seventeen courses). The other was given during the summer vacation and lasted about four or five days (70 teachers in three courses).

Reliability and Validity

Reliability was examined according to the homogeneity of the items. Homogeneity, in the sense that each particular item measured the same general factor of the evaluation of instruction, or the relevance of each item to a unified content area, in this case, the quality of instruction in the course. The questionnaire was found satisfactorily reliable (α=0.70). Some items deviated from the content area we were to assess, as they correlated rather low with the total score. Eliminating them would increase the reliability coefficient.

We questioned the significance of the questionnaire in order to measure its validity. Did it assess a concept or a theoretical construct? Did it evaluate the different dimensions of instruction? To what extent did the items crystallize into a definite system of dimensions?

Teachers' responses were analyzed by factor analysis. The question arose whether the different items investigated in the questionnaire may be grouped according to some more general dimensions. Results showed that there were three underlying dimensions of "teaching quality" as viewed by the teachers. Three factors covered most of the areas investigated and explain approximately forty-nine percent of the total common variance.

1. The course's contribution to the participants

The participants were asked how they benefitted from the course, what it contributed to their work as teachers, in what way it would change their instruction and what it did to their insight in education in general. It seems that the participants considered the in-service training's contribution most important. Moreover, they would recommend it to their colleagues.

2. Delivery

This factor dealt with methods of instruction in the course: frontal lessons, lack of workshops, few discussions and the practicality of the in-service training. The findings of the basic distinction between the contribution of the in-service training and delivery tallied with the findings of other investigators using the same statistical techniques.

3. Organisation

The third factor was concerned with the organization of the in-service training. It is important for the training to be administratively well-organized, and it should be run according to its planned objectives.

The teachers were given the opportunity to freely and openly express their reactions to problems that were not included in the questionnaire. The assumption was that qualitative assessment of the teachers' reactions would constitute a basis for diagnosis, for pinpointing deficiencies and problems.

Fifteen percent of the participants responded to the open question. Most of the responses were related to dimensions already included in the questionnaire, such as the contribution factor: "The course enriched my personal knowledge." "I expected the training to develop my insight into education." The responses toward delivery were: "Methods of instruction in the course are suitable, because they consider my previous knowledge." "The instruction tried to relate new information to material already acquired."

Relatively few responses related to factors not dealt with in the questionnaire, work load for instance. "Had I known that the course's requirements were so demanding, I would have taught less classes this year." A different factor mentioned was methods of evaluation and feedback to the participants. "How would the instructors know our mastery and understanding of what had been taught?" "Are we assigned grades at the end of the course?"

Implications

Traditional means of evaluation, namely the analysis of the participants' grading according to a statistic device, gives rise to some problems to think about.

A. The course is evaluated at the end of the process. Therefore, evaluation's contribution in improving instruction in a course while being given is almost non-existent.

B. A standard questionnaire deals with pre-assumed aspects which are not always relevant in the evaluator's opinion.

C. Information accumulated in such a way is usually too general to provide specific guidance to the deficiencies in the course.

Overcoming these obstacles, even partly, is possible by:

A. Evaluating a course more than once, while it is being run (even doing it every class session and giving feedback).

B. Providing the opportunity to freely evaluate and criticize, by asking an open question, or leaving space for comments and questions.

C. Administering very specific items that will give information about behavior or methods of in-service training such as: "Does the lecturer summarize a subject matter before he starts a new one?" or even an open question: "Give an account for the main deficiencies in the course. Provide evidence."

It is important to note that evaluation based on questionnaires is only one way of evaluating in-service training. Other means for gathering information are: Observations during the course, interviews with teachers participating, interviews with lecturers instructing the course and interviews with officials organizing the training, who sometimes gather informal information about the course.

There are two aims to the evaluation of in-service training courses.

A. Evaluation for improving the training.

The purpose of this diagnostic evaluation is to provide information relating to the quality of the in-service training, its structure and contribution to the participants. The results of this descriptive and specific evaluation help in planning the following courses.

B. Evaluation for administrative decisions.

It provides a basis on which decisions are made, namely whether to continue with the training, promotion of lecturers, budgeting, etc.

Appendix

Tel Aviv University
School of Education

Evaluation of In-service Training Questionnaire

The in-service training center for teachers is interested in your experience and opinion in order to improve the training. Please evaluate the training in which you participate, relating to the whole training and not to any particular lecture. Thank you for your cooperation.

The name of the training: ______________________________

I teach: 1. Elementary School; 2. Junior High School; 3. Senior High School;
4. Other.

Subject of teaching: ______________________________

I teach _______ years.

The following statements express different aspects of evaluation of the in-service training. Each statement is followed by a five points scale. Circle the number most suitable to your agreement with the statement. Number one expresses disagreement with the statement while number five expresses agreement. Numbers two, three and four express various degrees of agreement accordingly. Circle zero to indicate irrelevance of the statement to the course.

	agree				disagree	irrelevant
1. The in-service training enriched my personal knowledge in the area.	5	4	3	2	1	0
2. The in-service training was interesting.	5	4	3	2	1	0
3. The in-service training contributed to my general knowledge.	5	4	3	2	1	0
4. The instructors of the course related to my teaching experience.	5	4	3	2	1	0
5. The in-service training was too theoretical.	5	4	3	2	1	0
6. Homogeneity of the group contributed to the success of the training.	5	4	3	2	1	0
7. The in-service training was administratively well organized.	5	4	3	2	1	0
8. The in-service training was based on frontal lessons too much.	5	4	3	2	1	0
9. The in-service training lacked workshops.	5	4	3	2	1	0
10. The participants took a very little part in discussions.	5	4	3	2	1	0
11. The in-service training was conducted according to its planned objectives.	5	4	3	2	1	0
12. The in-service training improves the teacher's work very little.	5	4	3	2	1	0
13. I will recommend this training to my colleagues.	5	4	3	2	1	0

	agree				disagree	irrelevant
14. The in-service training would contribute to changing methods of teaching in my class.	5	4	3	2	1	0
15. The material taught during the training was too difficult to master.	5	4	3	2	1	0
16. The in-service training made me eager to participate in other trainings.	5	4	3	2	1	0
17. The in-service training contributed to my insight in education in general.	5	4	3	2	1	0
18. Most things discussed during the in-service training were not new to me.	5	4	3	2	1	0

Please add subjects, areas or problems undealt with in the questionnaire.

____

____

____

THE DEPARTMENTAL PROFILE AS AN INITIAL STEP TO THE IMPROVEMENT OF TEACHING

Brian E Oldham
Teesside Polytechnic, England

Faculty developers are central to many strategies aimed at the improvement of teaching in higher education. In the English Polytechnic system (to be described later) almost all institutions have a unit with responsibility for faculty development, normally consisting of a small number of academic staff with support from technical staff for the creation of learning resources. The critical problem facing such an educational development unit is how to make a significant impact on a large faculty when the developers are numerically insignificant.

Traditionally the unit has worked through induction courses, short intensive courses or workshops on teaching method and individual consultancy for lecturers. There are, however, fundamental problems associated with this pattern. As financial cutbacks reduce the number of staff being recruited to the Polytechnics, the use of induction courses to produce change agents to disseminate new methods is no longer valid. Short courses and workshops, important though they are, share the same disadvantage as does individual consultancy: they attract those colleagues already committed to self-appraisal and change. Consequently the traditional pattern of faculty development can produce a situation where the developers work only with those who have expressed a positive wish to be developed - which makes for pleasant working conditions but leaves basic questions unanswered. It was to attempt a different approach with the aim of working with the less committed that the present strategy was devised.

Teesside Polytechnic is situated in the heavily industrialised north-east of England. It is one of the 30 Polytechnics created by Government action between 1969 and 1973 as part of the expansion of higher education in England and Wales. They were to provide a wide range of courses, from sub-degree through honours degrees and diplomas to doctoral level. This distinction between the Universities and Polytechnics thus was not to be in level of courses, but rather in the fact that the Polytechnics were to emphasise their teaching function, although a base of strong research activity was also seen as vital. The Polytechnics were to be largely centrally funded, although locally controlled and their degrees were to be validated by a new Council for National Academic Awards.

Most of the Polytechnics were based upon mergers of existing colleges of technology, commerce and art and design. Sometimes a single powerful college was expanded, as is the case at Teesside. Such colleges had strong links with local industry, business and the professions, and this was to be used to develop courses with a strong vocational content.

The teaching staff were recruited in two ways: The core came from the existing colleges and were experienced in sub-degree work based largely on the need of local industries for technical and managerial staff. Such lecturers usually had little research experience. New staff were recruited from the professions and from new university graduates. Some were attracted by rapid promotion prospects from the ranks of university lecturers. An academic melting pot was created.

By 1984 the Polytechnics have expanded enormously, both in size and influence. All kinds of tensions have been created by this continuing expansion and, in many ways, Teesside Polytechnic shares in the general stress.

Teesside is a small polytechnic, with some 4,000 full time equivalent students and 350 academic staff. This represents an increase of 60% in student numbers over a four year period, starting from a time of admittedly artificially low enrolments. During the same period there has been almost no increase in staff.

The Polytechnic has, as is usual, a small Educational Development Unit consisting of three academic staff and a support staff of technicians, graphic artists and photographers. Its major responsibility is for staff (faculty) development, especially in the area of teaching and learning methods. It is responsible for policy to the Staff Training & Development Committee, a sub-committee of the Academic Board, the major policy making body of the Polytechnic. Within this policy framework the EDU has wide autonomy in its executive functions.

Essentially the principle of faculty development in England recognises the autonomy of the individual academic and is based on voluntary collaboration. As there is no contractual faculty appraisal it is very difficult to put pressure on colleagues who do not wish to involve themselves in updating their teaching skills. Consequently the EDU operated with those who attended advertised seminars and courses or who approached it for personal development. An opportunity to expand its activities was actively sought.

The Polytechnic is structurally based upon 15 academic departments, each administered by a Head of Department following policy determined by a Departmental Board comprising all members of the department concerned. There is no intermediate grouping of faculties or schools, each department being responsible to the Academic Board for policy and each Head of Department to the Director for management purposes. Thus departments have a great deal of autonomy. They vary in size from 12 academic staff to 34.

The Department of Administrative & Social Studies is the largest department in the Polytechnic in terms of student numbers and academic staff. It broadly covers the areas of sociology, social administration, social work and public administration. Its courses range from full-time honours degrees through diplomas and certificates in the appropriate professional areas. There is a comprehensive range of part-time courses as well.

In the period 1980-82, student numbers in the department increased by over 50%. The department was farced with a classic educational dilemma: if its resources were limited and its student body greatly expanded, how could it cope? The staff were committed to small group, seminar and tutorial based teaching, yet as is commonly the case, there was little hard evidence of what was actually happening in the classroom.

The Head of Department sounded out the EDU for assistance in examining the problem. In June 1982 the Departmental Board formally resolved that:

'The Department ask the EDU to provide a consultancy service on the teaching methods in this department.'

The Board's concept of a consultancy service was unformed and offered wide scope for the EDU to design a brief which would form the foundation for an in-depth enquiry followed by a continuing relationship. The plan of action was offered to the Departmental Board at a presentation made by the EDU in December 1982. The plan was accepted by the Board unanimously and has been in operation for some twelve months. It is reproduced as Appendix One.

As in any client/consultant situation there has to be a pay-off for both parties. There also has to be mutual confidence. To open up a department to external scrutiny is not yet common in Britain, nor is the exposure of an individual's teaching. There were two key factors which made for acceptance.

Firstly, the client was the Departmental Board and not the Head of Department. Thus the introduction to the brief sets out at possibly inordinate length the precise guarantees for the staff and students concerned. The importance of this groundwork of confidentiality cannot be over-emphasised.

Secondly, the vote of acceptance by the Board had been taken in the presence of the EDU consultants and had been unaminous. Consequently there was strong moral pressure upon all of the staff to co-operate and, in fact, all who were approached have readily done so. How many staff would have initiated such a contact without this framework and how many will continue the contact when the initial report is completed, are unanswerable questions, but on the basis of past experience we find it most stimulating to work with every member of a complete department.

This opportunity to work with a department is the reward for the consultants. What is the commensurate reward for the department?

An immediate and practical outcome is that it obtains a detailed report on its main activity - teaching. Written by external consultants the report is more objective than an internal report would be. Such a document is of use in several ways. Clearly it enables the department to consider the areas of strength and weakness which will have been highlighted. It will provide a solid foundation for a developmental programme to be set up in partnership with the consultants

But there is also a hidden curriculum in this kind of activity of which the faculty developer must be aware. In the present international shortage of resources in higher education almost every action has a political dimension A consultant's report instancing areas of teaching which are suffering from under-resourcing, whether these be faculty shortage, lack of equipment or teaching space, can be a powerful weapon in the inter-departmental battle for the allocation of funding.

Conclusion

This case-study has been limited to one department in one English institution of higher education. How far is the situation generalisable? The problem is central, if faculty development is seen as an important factor in improving teaching. The solution proposed here aims at obtaining the engagement in faculty development programmes of those who would be otherwise reluctant to co-operate. It seeks to employ peer-group pressure based upon the department as an entity and the departmental profile as an initial step. Certainly, in Teesside Polytechnic, the EDU is now being approached by other departments to carry out a similar exericse. There would seem to be no good reason why the approach should not be more widely effective.

TEESSIDE POLYTECHNIC **APPENDIX I**

EDUCATIONAL SERVICES UNIT

TO: Departmental Board
Department of Administrative & Social Studies 23 November 1983

Teaching Methods within the Department of Administrative & Social Studies

1.0 Introduction

1.1 The EDU has received a request from the Departmental Board to provide a consultancy service on the teaching methods in the department. This has been interpreted as a request to examine and comment upon the range of teaching methods employed within the department culminating in a report to the Departmental Board.

1.2 In carrying out such a major project, the EDU would wish to set out certain principles which would underlie its work and at the same time provide guarantees for staff and students involved:
  1.2.1 No individual lecturer will be identified in any paper or report.
  1.2.2 The strict confidentiality which covers all EDU staff consultancy activities will be maintained.
  1.2.3 No report will be made to any person or body other than the Departmental Board.
  1.2.4 Any research produced as a result of the enquiry shall be submitted to the Departmental Board for clearance.

2.0 The Nature of the Enquiry

2.1 To examine the teaching methods of a whole department involves two aspects: an overall view and a sample studied in depth.

2.2 The overall view can be largely formed from an examination of available data, such as:
  2.2.1 Course documents: group sizes, expressed methods of teaching, etc.
  2.2.2 Staff timetables, which indicate broad categories of teaching - lecture, seminar, laboratory, etc.
  2.2.3 Room allocation - size of room, facilities.
  2.2.4 EDU records of film and television programmes shown, use of TV studio.

2.3 The overall view can, however, present a picture which is not necessarily true of individual courses and will blur the view of teaching methods as experienced by the student. For this purpose it is necessary to study a sample in depth, which can only be done with the full co-operation of all those involved. Ideally we would work in the following way:
  2.3.1 A module from a course would be selected and the course document examined
  2.3.2 An interview would take place with the lecturer concerned to ascertain his perception of the teaching methods employed.
  2.3.3 An observer from the EDU would sit in on a period of teaching - an hour or a day as appropriate.
  2.3.4 Via a questionnaire the view of the students would be sought. This is not to obtain students' views on the 'quality'of teaching as they see it but rather on the variety and appropriateness of the methods of teaching and also to obtain a view of their private study methods.

3.0 Presentation

3.1 As the enquiry has been commissioned by the Departmental Board all reports would be made to the Board as set out in paragraph 1.2 above. At the same time, however, it is hoped that reports on courses would be welcomed by course leaders and that much productive activity would take place via contact with individual colleagues. Thus the form of presentation would be as follows:

3.1.1 Formal
- i. Overall view of teaching methods within the Department in the form of a written report to the Departmental Board.
- ii. Views on teaching methods employed within courses in the form of an amplification of the above to course leaders.

3.1.2 Informal

Discussions with individual colleagues will naturally take place after sessions.

4.0 Follow-up

4.1 The EDU would offer follow-up actvities such as:
- 4.1.1 Staff seminars on specific topics such as individual learning, variations in seminar organisation, etc.
- 4.1.2 Workshops on the preparation of learning resources, distance learning materials, etc.
- 4.1.3 A continuing personal consultancy service on teaching methods.

5.0 Proposals

5.1 The Departmental Board is requested to endorse the stategy proposed by the EDU for an enquiry into teaching methods employed within the Department.

APPENDIX II

1.0 Information (before Christmas)

1.1 In order to carry out our task we would like the following information and documentation:
- i. Courses (full-time/part-time) run by the department. Course documents would be invaluable.
- ii. Departmental timetable.
- iii. Staff (individual timetables) (including Research Assistants). These will provide us with information on:
  - (a) Time allocated to lecture, seminar, tutorials.
  - (b) Size of classes.
  - (c) Rooms Used.
  - (d) Courses taught.

No other informatin will be ellicited from these timetables.

2.0 Information Required (before Christmas)

2.1 From Staff

Using questionnaires, interviews and classroom observation it is hoped to obtain the following information:
- i. Teaching methods used in relation to course aims and in relation to students and group size.
- ii. Use of learning aids and technical support.
- iii. Teaching spaces and facilities.
- iv. Time available for personal tutorials.

2.2 From Students

Using a questionnaire, interviewing and observation it is hoped to obtain information on:
- i. Perceived teachiing methods
- ii. Private study.
- iii. Timing of sessions (ie. period within Polytechnic day).

SELF-ASSESSMENT OF UNIVERSITY TEACHING: BRITISH AND CANADIAN TEACHERS COMPARED

Clare H. Pangman
University of Manitoba

The potential value for a quick, easily administered instrument for the self-assessment of university teaching emerged, in part, from recent work in the area by researchers in Canada (Donald and Penny, 1977), and in Australia (Boud and Kilty, 1980). In the Boud model university teachers assess their own work through periodic collaborative sessions with colleagues. One difficulty foreseen in carrying out the 18 stages of this model, some of which require a period of a few days between sessions for data gathering, is the availability of time to carry out the self-assessment workshop series. In such cases the self conducted Instructional Analysis Kit is of considerable value. In an attempt to achieve some of the advantages of self assessment (described by Boud), and to do so within the brief period of time usually made available at the two or three-day staff development training sessions conducted at many universities, an instrument called INVENTORY OF OPINIONSABOUT TEACHING (IOAT) was developed. The results of its administration were used to study self-assessment of university teaching.

The responses to 100 items of IOAT from 108 university teachers in the West Midlands Region of the United Kingdom and from 104 Canadian teachers from the University of Manitoba, were used to develop the self-assessment instrument.

The four aspects of teaching techniques selected for study were Explaining, Questioning, Feedback, and Organization. A different but possibly related category of items, namely Concerns that teachers have about teaching was also prepared for the IOAT instrument. The "concerns" category was included to extend the work of King (1973) who reported the anxieties of new university teachers in the U.K. If concerns about teaching can be identified by self-assessment and if these concerns are related to the degree of skill which one perceives himself/herself to have in teaching techniques, then improvement in one's teaching techniques (through staff development workshop or other method selected by the individual) might result in a reduction in both the number and intensity of concerns held about teaching. The intended approach to the use of IOAT is best summarized by Seldin (1980): "In general, the approach (to harness self-analysis) is by a sympathetic comparison and discussion of student and self-rating. . . and a friendly discussion on teaching with faculty colleagues or teaching consultants." (page 85).

Factor analysis and cluster analysis resulted in ten scales being identified for the prototype instrument. Seven scales emerged from the 66 items on teaching techniques and three scales were defined from the 32 "concerns" items. Two items dealt with the use of IOAT.

GENERAL CONCLUSIONS

1) The Canadian teachers scored themselves consistently higher than their British counterparts on all seven teaching techniques scales - Scales 1 to 7.

2) The British teachers scored themselves consistently higher than their Canadian counterparts on all of the "concerns" items.

Four of the seven teaching techniques scales showed significant differences with Canadians scoring themselves higher than their British colleagues: Planning ($p<.05$), General Teaching Effectiveness ($p<.05$) Questioning ($p<.01$), and Awareness of Students ($p<.01$). One scale, Use of Time, approached significance ($p<.10$) and two scales: Explaining and Vocal Expression were not significant. [Results are shown in Table 1.]

The IOAT provided a series of 10 scale-scores with the scores on individual items noted. A series of one-way ANOVAs provided the significance tests. The scale titles with an accompanying brief description of Canadian versus British results follow.

1. Planning

Canadians scored themselves considerably better ($p<.01$) than the British in the organization and planning of both individual lectures and in the overall planning of course work. On the other hand, the British indicated they were significantly more at ease than the Canadians with the necessary organizational tasks of room-bookings, A-V equipment preparation, etc.

2. General Effectiveness

Canadians claimed themselves to be significantly (range $p<.01$ to $p<.05$) more adept than the British at:

1) relating their teaching to the reference texts
2) using praise to reinforce learning

CANADIAN AND U. K. UNIVERSITY TEACHERS COMPARED

- One Way ANOVA Using Scores on IOAT -

	Range of		CANADIAN TEACHERS		BRITISH TEACHERS			
SCALES SCALES	MIN	MAX	MEAN	S.D.	MEAN	S.D.	F.	SIG.
1. Planning	7	42	33.6	4.5	32.4	4.5	4.0	*
2. Gen. Effect	17	102	77.7	10.0	70.8	8.3	29.6	**
3. Questioning	7	42	30.0	4.7	28.1	4.6	9.4	**
4. Explaining	15	90	69.3	9.4	67.4	7.8	2.6	N.S.
5. Use of Time	4	24	16.4	3.1	15.6	3.7	3.3	?
6. Vocal Expression	7	42	30.1	3.7	29.4	3.5	1.6	N.S.
7. Awareness of St.	9	54	42.7	5.8	39.5	4.8	19.8	**
8. Conc: Teach. Effect	12	72	29.1	7.3	31.2	7.3	4.7	*
9. Conc: Self as Teach.	8	48	17.9	5.0	19.9	5.6	6.8	**
10. Conc: Pers. Effect	12	72	27.9	8.7	28.9	8.1	0.8	N.S.

SIGNIFICANCE:
N.S. = not significant
** = $p<.01$
* = $p<.05$
? = $p<.10$

TABLE 1

3) using anecdotes to support teaching objectives
4) using body language to advantage while teaching
5) using different techniques to maintain attention
6) identifying a set of criteria for effective teaching
7) having a teaching purpose behind all in-class activities
8) having a variety of techniques to establish rapport
9) generally promoting learning
10) gaining attention
11) having a variety of different teaching techniques to call upon.

Both groups scored themselves relatively low on the item which asked if they are always aware of what teaching tactic they are using when they are engaged in a teaching activity.

No significant differences were found in items which addressed the following:

1) bringing students back to the topic at hand
2) showing emotions while teaching
3) keeping oneself on topic
4) organizing teaching time or,
5) getting through a teaching task to the conclusion.

3. Questioning

Canadian teachers' scores were significantly higher ($p<.01$) in:

1) using questions to investigate students' knowledge of the subject prior to teaching
2) using divergent questions - those for which several, correct replies are possible.

A significant difference ($p<.05$) in the same direction appeared in both: teachers' self-perceived skill in the use of questions for different academic purposes and arousing student interest.

4. Explaining

Of 15 items in this scale only one showed the Canadian score to be significantly higher than that of the British: The awareness of several different uses to which explanations may be put. Marginal differences in favour of Canadians were found in the use of key points and key words while teaching. Issues within the remaining items of this scale deal primarily with the structure of explanations e.g., introduction, development, summaries, etc.

5. Use of Time

Of the four items used in this scale, Canadians scored significantly higher than their British colleagues on two:

1) gauging the amount of time required to teach each topic ($p<.05$) and
2) keeping student discussions close to the time allowed for them ($p<.01$).

No differences between the groups were reported for either: a) ability to stick to the time schedule while lecturing or b) organizing their time to adequately include teaching preparation and research.

6. Vocal Expression

Seven items in this scale addressed the respondent's self-assessment of vocal expression in such issues as being lucid and coherent and in using questions, summaries, conclusions and pauses while avoiding vagueness. Attention was also drawn to rate of speaking, pitch and loudness of voice.

No significant differences were found between British and Canadian scores in any items of this scale.

7. Awareness of Students

Awareness of and the attention paid to students seem to be especially different between Canadian and British teachers. Canadians seemed to pay more attention (range $p<.01$ to $p<.05$) to such issues as:

1) students are aware of examination procedures
2) understanding nonverbal messages from students that include signs of uncertainty and boredom
3) maintaining eye contact with students
4) accurate assessment of the different cognitive levels of student operation
5) social closure at the end of a lesson, and
6) rapport with students.

Both Canadian and British teachers showed awareness of but no difference in:

1) the importance of student feedback in relation to highly complex or overly simple terminology being used by the teachers, and
2) consideration for the student's feelings while verbally correcting an incorrect reply given by the student in class.

8. Concerns about Teaching Effectiveness

It is assumed here that all teachers identify certain aspects of their job which, from time to time, are the cause of varying degrees of concern. Such concerns may diminish to "passing thoughts," or may intensify at times to "pressing issues" or even "worries." The three scales on concerns represent the self-appraised concerns that university teachers have about their jobs. The differences among the three scales are primarily in the focal direction of the concerns. The focal directions are suggested by the title of each scale.

The concerns upon which British and Canadian university teachers assessed themselves show certain similarities, especially in intensity. Although the British scores tend to be higher, generally, than the Canadian scores (which suggests a greater amount of concern about the issue assessed by the item), the differences are significant ($p<.01$ to $.05$) in only three items out of 12 on the first scale. Certain intensity levels are of interest:

1) one of the three greatest concerns to British teachers and significantly more so than for the Canadians ($p<.05$) is: students don't seem to care about learning the material I taught
2) of high concern to both groups is the amount of time that teaching preparation takes away from research time
3) the single greatest concern to both groups is the feeling that the amount of time available for teaching places serious limitations upon what one actually can teach. Although concerns about 'time' tend not to show significant difference the fact that they are the 'greatest' concerns in the scale might carry some importance in their implications for staff developers.
4) of moderate concern to both groups but the only item which resulted in a highly significant ($p<.01$) greater concern by British teachers was that students think the teacher is vague in their teaching. Also of moderate but of significantly greater concern ($p<.05$) for the British is that students feel the course is inadequate.

5) Two items, intended to identify individual respondents who claim to experience rather extensive emotional discomfort with their teaching situation, are to be used for individual attention in staff development practices. Both issues assessed tend (fortunately) to be low concerns among both British and Canadian teachers as groups. They are:

   a) I find that very few aspects of teaching are really enjoyable for me, and

   b) I sometimes feel so uneasy about my teaching that I prefer to be alone.

9. Concerns about Myself as a Teacher

Three of the eight items in this scale indicated a significantly greater ($p<.01$) concern by British teachers:

1) if someone would clarify to me my teaching responsibilities, I could teach better,
2) I feel that sometimes I am insincere with my students, and
3) I consider my voice unappealing to listeners.

For the British teachers 'voice appeal' was of greatest concern.

Of considerable concern, but not significantly different, to both groups were:

1) uncertainty about the use of humour with students, and
2) personal mannerisms of the teacher.

As before, the item which resulted in the least concern by both groups is intended for use with individual respondents:

I sometimes feel so uneasy about my teaching that I am withdrawn and nervous.

10. Concerns about my Personal Effectiveness as a Teacher

1) Canadian teachers appeared to be more concerned over students who 'act up' in class.

2) British teachers are more concerned with:

   a) assigning proper grades, and

   b) the concern that after it is planned, the lecture appears to be inappropriate.

3) A high and significantly greater ($p<.01$) concern to British teachers is that students don't really understand what the teacher is saying to them.

DISCUSSION

Whether or not the results of IOAT have been successful in objectively identifying some of the characteristics of "reserved" Englishmen and "brash" Canadians suggested in some folklore is unresolved. IOAT does appear, however, to be able to identify certain differences on the self-assessment of teaching techniques as provided by the groups of Canadian and British university teachers compared in this study.

In support of the notion of self-assessment of university teaching through a paper and pencil instrument like IOAT, the analysis of initial returns suggests that the rapid availability of data could be useful to both individual instructors and to staff development personnel in the identification of teaching techniques which the teacher may wish to improve upon. The method of improvement is left to the discretion of the individual teacher with the assistance of the staff development consultant should one be involved. Canadian teachers tend to assess their teaching techniques higher than British teachers do and Canadians report less intense concerns about teaching than British lecturers do. The usefulness of the IOAT instrument in individual cases remains to be tested. Certainly the skill and insight of the staff development consultant involved in such matters will continue to be of eminent importance. The IOAT instrument, hopefully, will provide both teacher and consultant with at least some assistance in the improvement of university teaching.

It would appear that a viable, effective and time-saving instrument has been developed. Subsequent use of IOAT will determine if it is useful to university professors other than those in the test sample.

REFERENCES

Brown, G. A. (1978) *Lecturing and Explaining*. London, Methuen.

Boud, D. J. and Kilty, J. (1981) 'Self-Appraisal for University Teachers: A Guide for Workshop Leaders' *Tertiary Education Research Centre, Univ. New South Wales, Occasional Publication No. 19*, paper read at IUT conference, Japan.

Donald, J. and Penny, M. (1977) *Instructional Analysis Kit*. Center for Learning and Development, McGill University, Montreal, Canada.

Evans, L. F. (1980) *The Conduct of Meetings*. City University, London.

King, M. (1973) 'The anxieties of university teachers', *Universities Quarterly*, 28, 69-83.

Seldin, P. (1980) *Successful Faculty Evaluation Programs*. Crugers, N.Y. Coventry Press.

EDUCATIONAL CONSULTANTS AND THEIR CONTRIBUTION TO THE IMPROVEMENT OF TEACHING

Derek Rowntree

The Open University, England

Introduction

Over the last 15 years, England's Open University has pioneered three approaches to improving the quality of teaching and learning. The chief of these is *distance education* -- based on multi-media, packaged courses which the students study largely in their own homes, having little face-to-face contact with tutors or other students. The second innovation is the *course team* -- the multi-media courses are developed by anything from three or four to a couple of dozen subject specialists and educationists stimulating one another to produce teaching materials and strategies of a quality that none of them would have been able to produce if working alone. These two innovations have both been spoken of at previous conferences. But the third has not, and this is the use of *educational consultants* to help the course teams. The Open University has a cadre of some 50 professional staff who combine teaching and research with acting as pedagogic consultants to colleagues in other departments (and often to institutions outside the Open University). Even in these days of economic stringency, more and more colleges and universities are using educational consultants, and we may well ask why. Hence these reflections on our Open University experience may be timely.

The Nature of Consultancy

What is consultancy ? It is a relationship between a consultant and one or more clients to whom he or she offers help. The relationship is voluntary for both parties, and it is also temporary. The clients value their consultant as a benign alien, bringing them skills and insights that are not presently available within their group.

There are three main roles that consultants may be called upon to perform. Firstly, they may be asked to do something, or produce something, that the clients cannot do for themselves. They may be asked, for example, to carry out a faculty evaluation, organize study skills workshops, or produce a teaching text or computer program. Secondly, they may be asked to train the clients to do such things for themselves. This may involve some form of induction course followed by continuing advice or comment as clients try to implement the initial training. The third role arises when clients are *far from clear* as to what help is needed. They approach the consultant as someone known to be an intrepid (and surviving) traveller in the pedagogic territories they are newly venturing into. They recognize that the consultant's help may be needed in identifying *problems* as well as possible solutions.

The three roles can be labelled, respectively, as Producer, Trainer, and Counsellor (or Critical Friend). The first two are widely understood and quite well defined. Clients may be able to describe precisely the product they expect or the specific skills they hope to learn. The role of Counsellor or Critical Friend, however, is more problematical and its outcomes cannot be pre-specified or predicted. Yet experience suggests that the success of an educational consultant in improving the quality of teaching is closely related to the extent to which he or she is able, willing and encouraged to exercise this little-understood role.

Popular legend reports that oysters produce pearls only in response to grit. The quintessence of the art of consultancy is to be the grit in the educational oyster. As one of my clients put it, consultants should be an external irritant. They should not simply reflect back what colleagues are already thinking and feeling. All individuals and social groups become prisoners of their daily routines, blind to possibilities that lie outside their traditions and assumptions. So the consultant should be reminding clients of forgotten values, challenging untested assumptions, and introducing alternative approaches that would otherwise never enter their awareness.

Hence the client group may transcend itself — developing ways of teaching and learning and co-operating that no-one (not even the consultant) could have anticipated. Such consultants are, by definition, outsiders. They are with the client group, and very much for them, but, in an important sense, they are not of them. But nor are they superior to the clients. (It is the oyster, not the grit, that makes the pearl). Their role and responsibility is simply to be different.

Contributing as a Counsellor or Critical Friend

So what exactly might you be doing in this role of Counsellor/Critical Friend ? Above all, you will be a problem-solver. You will be keeping track of ideas, individuals, and situations as they develop -- deciding whether they might benefit from interventions that would not come from elsewhere in the client group — and making such interventions where necessary. For instance, you may be probing your colleagues' educational aims and purposes -- perhaps revealing hidden conflicts between different members of your group. Here and elsewhere, you may be questioning your clients' received wisdom or challenging their assumptions about teaching and learning. Thus you may initiate a new and valuable form of debate among clients, bringing new perspectives to bear on pedagogic notions that have hitherto been taken for granted. You may even be seen as the conscience of the group -- helping your clients keep true to principles they really do uphold but which easily get forgotten amid the pressures from students, administrators, and fellow teachers.

As a disinterested Counsellor, having no personal axe to grind, you may find some clients using you as father- or mother-confessor. Rather than risk losing face with regular colleagues, they may bring you their self-doubts and professional hang-ups -- like "Why does the Dean keep sabotaging my ideas?" or "Why do students cut my classes?". Your relatively detached view of proceedings may also help you foster the wider interests of your group. You may, for instance, be able to prevent the bullies and whiz-kids from riding rough-shod over the ideas of colleagues who are not so forceful but may be more creative. Likewise, you may be able to help an innovative project from drifting back towards the status quo under pressure from people outside the group.

One useful stance you might take is that of 'resident incompetent' or 'licensed idiot'. That is, you may improve the quality of teaching by asking your clients elementary-seeming questions about their handling of the subject-matter -- in fact, just the kinds of question that students hesitate to ask for fear of being thought slow-witted or dense. Indeed, you may present yourself as a surrogate student or as 'students' friend'. You may spend considerable time talking with students about how they approach their studies. Since they will know that disclosures to you will not affect their grade-point-averages, you may be able to bring back news about what students know and do not know, what they might be ready to learn next, and how they are likely to deal with the ideas and activities proposed for the course -- all of which 'inside knowledge' can transform the ways teachers relate to their students.

So, to sum up, as Counsellor/Critical Friend you will be helping clients recognize problems they might never have known they had -- and, by the way you help solve them, generating new perceptions and ways of working that would have been impossible without your outside knowledge and your outsider role. What your clients need from you is your memory of comparable situations elsewhere together with your ability to transmute this experience to suit their problems. Consultants may possess the most marvellous knowledge of pedagogic techniques and group dynamics (derived from the best research and from their own practical experience of teaching and of other client groups) -- yet they will be ineffective unless they have a perceptive eye for the uniqueness of the situation and can adapt their principles to suit the context -- and their clients' capacity to make use of them.

Five Recurring Dilemmas

The Counsellor/Critical Friend faces a number of recurring dilemmas and quandaries -- practical, moral, and existential. I want to mention just five of these. The first concerns the nature of the problems you are helping to solve. Do you focus on the problem presented by the client -- or do you regard this simply as an invitation to seek out the real problems ? This is a dilemma many family doctors have been taking more seriously in recent years. The patient, or any other client, may not be aware what the real problem is, or may not care to admit it to you, until the consultative rapport is well established. Hence one can easily get drawn into solving the wrong problem -- helping teachers televise lecture material that should never have been presented at all or talking study techniques with students when really it is the teaching techniques of faculty wherein the trouble lies.

The second dilemma concerns loyalty. Conflicts of interest will often make you wonder who your true clients are. For example, do you owe ultimate loyalty to the person or institution that is paying for your time, to the teachers you are working with (and even they may be at odds with one another), or to some outside criterion of proper conduct ? You may hold that students are the true clients and that it is their interests to which you owe your ultimate loyalty. You may even need to weigh your responsibility towards the people with whom your students will ultimately be working, e.g. the future patients of medical students or nurses. The consultant cannot avoid moral choices.

A third dilemma concerns whether to focus on what is taught or how it is taught -- the content or the methodology ? Unless you are being called in as a Producer, clients will probably be looking chiefly for guidance on how to develop new teaching strategies and use new learning media. Thus it is all too easy, but might be a big mistake, to assume that all your clients are teaching subjects they are expert in. For a variety of reasons, some clients may find themselves teaching topics they were never very sure of, or may never have studied at all. So you cannot assume that clients will be infallible in content, leaving you to concern yourself solely with matters of presentation. Rather, you may need to help your clients explore their knowledge and understandings as well as probing their teaching strategies. Discussion may uncover important errors or omissions, or biasses and imbalances, or faults of interpretaion. Clients may come to prefer their well-disposed (and so tactful) consultant to help locate such weaknesses rather than leaving them for outside critics to pounce upon.

A fourth dilemma the consultant has to live with is whether to focus on developing the teaching or on developing the teachers. Are you helping your clients or helping them to help themselves ? It is a question of balance. On the one hand, you must not deny your clients advice that will save them much time and frustration. On the other hand, you must avoid being so prescriptive that they lose all incentive to hammer out approaches that they can more truly call their own.
Most consultants anxious to prevent their clients becoming dependent on them will follow the old proverb: "If you give people fish you feed them for a week; but if you teach them the techniques of fishing, you feed them for a life-time". Such consultants hope that their efforts will go to improve the quality not just of this semester's teaching but also of the teaching their clients do in the future.

The fifth and final dilemma, an existential one, concerns whether you can hang on to your detached, systemic perspective or will drift or be pulled into working much like any other member of the client group. To be sure, the role of Counsellor/Critical Friend is an exposed one -- full of conflict and ambiguity. It can be stressful and lonely. You may be only too aware of more potential problems around you than you have time and skill to deal with yourself. Furthermore, it is often difficult to be certain about just what your efforts are achieving anyway. Thus there is always the temptation to come in from the cold and take direct responsibility for some of the client group's teaching or administration. To do so can bring instant, easy appreciation from the clients -- another pair of hands is always welcome. In emergencies, such interventions may be the only way the consultant can help the group avert disaster. But if the consultant were to settle into the Producer role as a matter of routine, then the client group would be losing a precious resource. There would be no-one left to represent the wider, detached perspective, or to suggest how things might be done *otherwise*.

The Professional Satisfactions of Consultancy

Despite the dilemmas and quandaries, and the many ways in which the client-consultant relationship can go wrong, the work has many true satisfactions. Obviously, it is ideal for anyone who enjoys the opportunity to get the feel of other people's subjects and other people's institutions. In these days of restricted job-mobility in academe, this temporary experience of elsewhere is about the only kind left open to us.

Professionally speaking, it can do you a power of good to have to come to terms with other people's problems and perceptions -- whether in another department, another institution, or another country. Time and again, being invited into a subject-matter I have never studied before or being asked to advise on some quite outlandish training problem, I have felt "How can I *possibly* have anything to contribute here?" But, lo and behold, the familiar pedagogical weaknesses and administrative oversights soon begin to crawl out from behind the unfamiliar rhetoric.

The years of experience elsewhere, provided they have been sufficiently reflected upon, prove relevant even in quite different circumstances. Certain insights and approaches do turn out to be transferrable, or at least adaptable. You can, after all, see ways to improve the situation and help the participants.

So the clients can learn from your experience elsewhere. But the flow of ideas is not just one way. There will be *cross*-fertilization. You are *not* a catalyst -- changing all around you while remaining constant yourself. You will learn from each experience of consulting and you will carry away models and analogies that you can use, back on your home ground, in improving your own teaching, or in consulting elsewhere on another occasion. In short, you will be helping your clients become better teachers, but they will be doing the same for you.

I look forward to hearing the experiences of other educational consultants attending this conference.

Derek Rowntree January 1984

INSTITUTIONAL PLANNING: FOCUS ON CAMPUS CLIMATE, COMMUNITY NEEDS, "MEGATRENDS"

FRIDAY, 6 JULY

1630 - 1800

MATCHING THE SOCIAL WORK CURRICULUM TO THE DEMANDS OF THE WORKPLACE

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The purpose of this paper is to introduce a process which will sharpen the skills of undergraduate and graduate social work educators in the development and utilization of a competency based social work practice curriculum which may be used as a continuum between the two education levels. As a result of reviewing this article, social work educators should be able to take a general competency area, which is recommended by practitioners in the workplace and identified in the social work literature, and make it more specific according to the complexity of the skills involved and the educational level of the target student population. They also will be able to use a curriculum workplace congruency model to construct a social work practice curriculum which could be used from beginning undergraduate levels through graduate education.

TRENDS IN SOCIAL WORK EDUCATION

Significant changes in social work education and social work practice have taken place since Herbert Bisno's 1959 curriculum study on the need for undergraduate social work education.[1] Although the professional literature reveals a trend in practice to use the baccalaureate social worker (BSW) in a variety of situations, social work practitioners and educators question the validity of the preparation of the BSW as the entry level practitioner. Some educators maintain that the BSW will never be expected to perform all the social work roles and related competencies identified for them in the literature. They believe the BSW will perform and become competent in only certain sets of behaviors. This view is supported by some agency practitioners who suggest limited professional activities for the BSW.[2]

Because restrictions and concern for the BSWs' practice appear to be an outgrowth of the lack of clarity and agreement about the practice behaviors expected for baccalaureate and master levels of practice, undergraduate educators have turned to the workplace focused competency based education movement as one way to articulate the behaviors appropriate for BSW practice.[3] Competency based approaches to social work education at the undergraduate level focus on learning being defined in terms of its workplace expectations and identifying explicit curriculum objectives for the student. Once these expectations are chosen and defined, it is assumed that the learner can engage in learning activities and develop competence in the process.[4] Competency-based education begins with identification of specific work expectations which become the objectives of the learner. Following are the general components of the competency-based education approach which address undergraduate educators need for clarity:

1. Precise practice expectations, defined in terms of behavioral outcomes, must be known to the learner and the instructor.
2. The learner knows what is expected to be demonstrated at the required level and the instructor is accountable for helping the student meet the competencies.
3. Instruction is personalized and the learner may have the chance to be self-paced.
4. The learner is evaluated in terms of reaching a set objectives which are stated in terms of work expectations.[5]

The Montana Competency Scales, developed by faculty at the University of Montana, and the Undergraduate Social Work Curriculum Development Project, conducted by Betty Baer and Ron Federico, focus on the workplace practice outcomes or the competencies that graduates of baccalaureate programs should have as they leave school and enter the practice world.[6] These workplace practice outcomes have become the program objectives of many undergraduate social work programs and guide curriculum activities towards preparation for social work practice.

The BSW practice expectations identified in these studies and other curriculum building projects[7] are the same workplace behaviors which have been and continue to be practiced by MSWs. The issues associated with developing the linkages between BSW and MSW education and practice levels, although vital for the survival and growth of the profession, were not addressed when the non-specialist focus for the BSW was being developed. In a recent comparative study which explored the difficulties associated with defining practice expectations for the baccalaureate generalist, the impact of failing to address the linkage task on the profession today was discussed.

> "This oversight strengthened the argument that the BSW should be prepared as a generalist while avoiding the fact that generalist practice also exists at the masters' level. Today, the symptoms of avoiding this task appear to be the on-going schism between and within education and practice communities. Only recently, formal efforts to find ways to confront the task have begun with the formation of the Committee on Articulation of Graduate and Undergraduate Social Work Education".

There are other problems too. Many social work educators have taken the workplace expectations found in the research and directly applied them as their program objectives without going through a process of "ownership" or modification and intentionally matching them to the demands of the workplaces in their environment.

Consequently, the practice community, namely field practicum supervisors, are expected to be able to tune-in to new jargon, new practice expectations, and something called "competencies"; at other times, the content courses in the program may not be congruent with the program objectives, or the program faculty may have difficulty translating current practice competencies into their own meaning. In most situations, MSW level field supervisors are asked to work with undergraduate students to develop skills, values, and knowledge once considered to be only within their educational domain.

THE CURRICULUM - WORKPLACE CONGRUENCY MODEL

The curriculum workplace congruency model addresses these problems as well as the issue concerning the lack of clarity about the workplace practice expectations for the two levels of social work practice. It was developed by a group of undergraduate social work educators who were struggling with the concerns noted above as they were creating a new and related graduate social work program. In order to develop workplace outcomes that reflect the need to attend to human diversity, a small group who represented racial, sex, ethnic, and practice differences provided leadership in its development. They used the competencies identified in Baer and Federico's Undergraduate Social Work Curriculum Development Project as the starting point for their work.[9] The model has six stages, each having several components.

I. Preparation and Validation Stage

  A. Review all the workplace competencies identified by Baer and Federico.
  B. On a separate index card, write each skill which is identified as required for the general competencies to be achieved. Note that the skills are common to both MSW and BSW levels.
  C. Eliminate the cards which have skills which are redundant.
  D. Clarify and reqrite ambiguous skills on new cards.
  E. Group and cluster the cards according to skill similarities.
  F. Give each skill grouping or cluster a title. The title represents the general program outcomes and the grouped set of skills are the workplace practice expectations which some of the faculty are beginning to "own".

II. Organizational Screening Stage

  A. Determine the number of quarters or semesters which will comprise the field practicum experience.
  B. Place the general program outcomes (cluster titles) in each quarter or semester of the field practicum.
  C. In order to have each quarter or semester of field experience reflect different levels of workplace practice expectations for each outcome area, arrange the expectations for the general outcome areas by levels of difficulty in each of the field experiences, with the

expectations in each experience being more complex and demanding than the preceding experience.

III. Revision Stage

A. Forward the document to the entire faculty for individual review.
B. Gather feedback and structure small group discussions for new input and clarifications. This provides opportunities for individuals to identify or struggle with the workplace practice expectations and to begin to generate questions about differing levels of practice.

IV. Workplace Matching Stage

A. Forward the revised practice curriculum to agency field practicum supervisors for use with the students.
B. Welcome feedback about the jargon and language which you now are beginning to understand, but your supervisors may not.
C. Document the feedback and work it through the field practice committees and the program's curriculum committee. Match the curriculum to the demands of the workplace agency settings.

LINKING BSW AND MSW LEVELS OF EDUCATION TO THE WORKPLACE

If progress is being made, feel free to stop before entering the following stages. Continue with these stages if there is confusion, faculty or workplace field supervisor disagreement, or a need to articulate the different levels of skill complexity in workplace expectations which are common to BSW and MSW levels of practice. By identifying common expectations, educators also begin to set the framework to articulate educational differences and to develop linkages between the two practice levels. The last two stages of the model represent this process.

V. Refinement Stage

A. Develop a continuum as a guide; translate the general program outcomes (your groups or clusters) and their workplace practice expectations into this format.
B. For each general competency, establish values on the rating scale to signify different levels of skills.

Figure I presents an example of a continuum with one of the general program outcomes and its set of related workplace practice expectations which were developed by the faculty.

FIGURE 1. PROGRAM OUTCOMES

II. PROFESSIONAL USE OF SELF

	0	1 2	3 4	5 6	7 8	9 10
A. Ability to get along with colleagues and others in a working situation.	No opportunity to practice.	Creates conflict by antagonizing others.	Tends to keep areas of concern to self rather than share with colleagues.	Contributes to cooperative work in most situations.	Has good working relationships. Can discuss areas of conflict openly and honestly.	Stimulates others to work cooperatively in the interest of service to clients.
	0	1 2	3 4	5 6	7 8	9 10
B. Interest in his/her work as a social worker.	No opportunity to practice as a social worker.	Appears bored.	Sometimes gives the impression of a lack of enthusiasm.	Appears interested in present roles and assignments.	Usually engrossed in his/her work.	Finds assignments and responsibilities fascinating and stimulating.
	0	1 2	3 4	5 6	7 8	9 10
C. Commitment to continuing professional development.	No opportunity to observe.	Not self-critical; apathetic about increasing skill and knowledge.	Inconsistently responds to requests to increase knowledge and skills.	Usually initiates efforts to evaluate own practice.	Demonstrates a sense of professional responsibility beyond the immediate task.	Consistently seeks to extend knowledge and improve skills. Can evaluate own practice and share findings with colleagues. Prepares for new responsibilities beyond the immediate.

To differentiate between the practice behaviors appropriate for the BSW and MSW levels of practice in a geographic area, faculty and field practicum supervisors review the continuum of behaviors and circle the numerical value which represents their expectations for the graduate of a baccalaureate or master social work program. It may be convenient to use one color of ink to represent the BSW expectations and another color to represent MSW expectations. The final version of the continuum may be used as a tool for the faculty advisor and student to use in charting progress, as well as the means for undergraduate and graduate educators to link their respective educational levels and to match their curricula to the realities of the workplace.

VI. Implementation and Evaluation Stage

A. Return the continuum to the entire faculty for review, revision, and agreement.
B. Forward to agency supervisors for field testing and revision.
C. Generate feedback to use as part of a continuous field and class curriculum matching mechanism.

RESPONDING TO WORKPLACE CONCERNS

As a result of utilizing the curriculum-workplace congruency model in social work education, the following questions will be more fully addressed: What are the tasks and problems associated with constructing a workplace focused practice competency curriculum? How do practitioners and educators together take practice research and integrate findings into the curriculum? Is it possible to differentiate between the practice competencies which are common to undergraduate and graduate education levels, arrive at agreement about the behaviors appropriate for each level, and create a linkage across the levels and with the workplace?

This curriculum development process allows educators to remain responsive to changing practice conditions by providing opportunities for agency supervisors to offer input about the needs of practice.[10] The model ensures that students will focus on the realities of practice and be prepared to enter the profession at the beginning or advanced level with practice competence, thereby diminishing the probability that they will rapidly experience job related stress and burnout as future practitioners.

NOTES

1. Herbert Bisno, The Place of the Undergraduate Curriculum of the Future (New York: Council on Social Work Education, 1959).

2. See, for example, Shirley Cooper and Barbara Krantzler, "Why the Haste?" Social Work, 21(January 1976), pp. 2-4; Lenore Olsen and William M. Holmes, "Educating Child Welfare Workers: The Effects of Professional Training on Service Delivery." Journal of Education for Social Work, Vol. 18, No. 1 (Winter 1982), p. 94

3. Morton L. Arkava and E. Clifford Brennen, editors, Competency Based Education for Social Work: Evaluation and Curriculum Issues (New York: Council on Social Work Education), 1976; David E. Cummins and Morton L. Arkava, The Montana Social Work Competence Scales (Missoula: The University of Montana, 1974).

4. Ralph W. Tyler, Basic Principles of Curriculum and Instruction (Chicago: University of Chicago Press, 1969).

5. Based on Herbert H. Jarrett, "Some Developmental Notes on Competency-Based Education and Social Work Education" in Ann L. McLean, editor, Competency-Based Perspectives in Baccalaureate Social Work Education (Oshkosh, Wisconsin; Association of Baccalaureate Social Work Program Directors, 1980)

6. Betty L. Baer and Ronald Federico, Educating the Baccalaureate Social Worker: Report of the Undergraduate Social Work Curriculum Development Project (Cambridge, Massachusetts: Ballinger Publishing Co., 1978).

7. These include the following: Robert Barker and Thomas Briggs, eds., Manpower Research on the Utilization of Baccalaureate Social Workers: Implications for Education (Washington, D.C.: U.S. Government Printing Office, 1971); Robert Ryan and Harold MacPheeters, A Core of Competence for Baccalaureate Social Welfare (Atlanta, Georgia: Southern Regional Education Board, 1971); and the findings of the Allenberry Colloquium as noted in Donald Feldstein, Undergraduate Social Work Education: Today and Tomorrow (New York: Council on Social Work Education, 1971).

8. Frank Baskind, "Definitional Dilemmas and the Baccalaureate Generalist", Journal of Sociology and Social Welfare, Vol. IX, No. 1, March 1982, pp.170-185.

9. Baer and Federico, pp. 185-219.

10. It also should be noted that this model can be used to assess the new NASW Standards for the Classification of Social Work Practice (Policy Statement 4, 1981) for the two levels of practice.

MONTGOMERY COLLEGE COOPERATES WITH LOCAL EMPLOYERS

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Montgomery College

Introduction

Who is going to educate and train employees of local employers? Will it be the employers themselves, associations or unions, private educational institutes, or colleges and universities?

In most urban areas, education and training will be offered by all of these suppliers. Montgomery College, a large community college located in Montgomery County, Maryland, an area with a large concentration of high technology and service firms, as well as governmental agencies wanted to learn how it could better serve the educational and training needs of County adults in general, including the personnel of these employers. The need to learn how the College could serve these adults better was conceived as part of an overall community assessment research project. This project includes studies of the educational demands of currently enrolled students and future high school graduates as well as the educational demands of area adults and employers. The supply of educational opportunities also was reviewed to some extent. The College Board was employed to help Montgomery College with the studies of adults, employers, and suppliers of educational offerings. A Community Assessment Task Force was established to oversee the work of The College Board. The College attempted to measure educational demand, not need so as to get a more accurate picture of the education and training potential that actually exists. The remainder of this paper will concentrate on one facet of this research, the study of the education and training needs of major employers in Montgomery County.

Gathering Information about Montgomery County Employers

The idea of providing education and training for County employers was not a new one for Montgomery College. It had been doing this through its off-campus credit divisions on the three campuses and its continuing education unit. However, the College believed that it could do a better job in serving County employers if it knew more about them and their demands for education and training. The term demand is quite appropriate for area employers, especially those in the private sector, because when they decide their employees need certain training, they generally want it provided in the very near future.

Thirty large County employers were selected for potential participation in this project. A letter was sent by the College's President to each C.E.O. explaining the project and requesting the employer's participation. Two weeks later, telephone calls were made to arrange for interviews. Sixteen employers agreed to participate. Interviews were conducted with chief administrators, personnel directors, or training directors, etc. of these sixteen employers. Ten interviews were conducted by The College Board with Montgomery College assistance and six interviews were conducted by Montgomery College personnel only. Approximately 80 percent of the employers were businesses while the remainder were either public agencies or non-profit organizations. Either the College's President or another high level administrator went on each of the sixteen interviews. The selection of College officials was based primarily on the level of the senior person to be interviewed. If the president or a vice president of an employer was to be part of an employer's interview team, then either the College's President or a vice president went on the interview.

Prior to the interviews, College personnel prepared a summary report about each employer. This report contained information about the employer's business, its key people, and a record of any previous work with the College, where appropriate. All members of an interview team reviewed the report prior to an interview.

During an interview, information was sought regarding an employer's specific needs for training and services. We also explored how we could cooperate in such areas as the exchange of personnel, the sharing of equipment, and the use of each other's facilities. The College also wanted to know if an employer thought that Montgomery College should serve as a "catalyst" by arranging for educational opportunities to be conducted by other educational providers from throughout the nation that Montgomery College itself might not be prepared to offer. The College also sought to learn who has been providing education and training for the employer, other than Montgomery College, and what they have been providing.

The organizations surveyed were not a representative sample of County employers. Therefore, the findings cannot be generalized to all County employers. However, the sample was adequate to determine the potential for expanding training and educationally related services to large County employers.

Survey Findings

The College learned that there is a great deal of interest in having Montgomery College expand its provision of education and training and special services to major County employers.

The degree of interest among the 16 organizations interviewed was high. Almost all employers pointed out specific training needs which Montgomery College could satisfy. Some organizations already had a working relationship with Montgomery College and were interested in expanding and further adapting the existing instruction to better meet their needs. Other employers identified new areas of interest and were seeking courses tailored to these needs. Employers also identified some existing courses which they were interested in having Montgomery College take over. Some of the more frequently stated courses included computer science, micro-computer usage, technical writing, management, mathematics, secretarial, especially word processing, and interpersonal skills.

Two of every three of the interviewed employers also expressed an interest in having Montgomery College provide other services. These services ranged from the traditional academic support services of counseling and advising to providing resource people, speakers, or a staff exchange, to the more technical services of computer sharing and systems analysis. Also some employers requested additional services for their workers, such as arranging for child care for employees taking courses at the employer's site after hours.

About two of every three interviewed employers indicated an interest in having Montgomery College serve as a "catalyst" for arranging for education and training that we are not prepared to offer. Interests were expressed in having Montgomery College serve as a bridge to the four-year institutions in the area to help to improve access to graduate level programs in specialized fields, and to arrange for top-level experts to conduct workshops and conferences.

Follow-Up Activities

The design of the "Community Assessment Project" anticipated a sequence of activities over a period of time. It was believed that after data were collected, tabulated, and analyzed, several reports would be prepared which would recommend further action to meet the educational demand described by the interviewees.

It is important to note that each of Montgomery College's three campuses and its continuing education unit had previously been functioning independently in their efforts to meet the needs of employers located in their service areas. For example: our northernmost campus in Germantown interacted with employers in the up-county area; our southernmost campus in Takoma Park interacted with employers in the down-county area; and our mid-county campus at Rockville interacted with employers in the mid-county area. Since each of these campuses provide only credit instruction, their interests were confined for the most part to developing credit courses at off-campus sites. The continuing education division had been operating county-wide to develop and offer non-credit instruction.

It became immediately apparent that this divison of responsibility had created some confusion for our potential clients and would diffuse our efforts to respond quickly to meet their needs. Furthermore, we had made a joint initial successful contact and we wanted to continue to use the same approach.

A Client Centered Concept

Borrowing from our experience with the large employers which we had just interviewed, we discussed the way they interacted with us and made the following observations.

1. Their initial contacts with us were made by one or two people who were able to assess our products and services, and provide information on their complete line of products and services.
2. They assigned a lead person who continued to be our primary contact.
3. For specific products and services they brought in specialists as needed. These specialists worked with individuals on our staff for the provision of a unique product or service.
4. There was no need for us to understand their corporate organizational structure since we had only to call our primary contact person when we needed something.

Based on this analysis we developed a process for immediate and continuing follow-up on which we would approach each employer as a "client."

The Team Approach

It was agreed that immediately after their meetings with company representatives each team would prepare a written report describing their impression of the company as a prospective client. In addition the team leader would prepare and send a thank you letter to the individuals with whom the team had met.

On the basis of the written report and a debriefing session with the team leader, the employer would be assigned to a follow-up team which would be led by a senior academic administrator. Each team would be assigned a representative from both the off-campus credit and non-credit divisions depending on the perceived demands of the company.

Then the follow-up team met to develop a plan for follow-up activities. They called for an appointment and conducted a follow-up visit to introduce the primary contact person from Montgomery College to the individual at the client who was to be their primary contact.

After this follow-up visit, the follow-up team prepared a specific plan of action for future activities with their client. This plan includes:

1. Specific follow-up activities
2. Individuals responsible for each activity
    a. Team members
    b. Other college personnel
3. Budget
4. Timetable for implementation

This plan was then reviewed by the Academic Vice President and modified or approved. After approval by the Academic Vice President, the team leader assumed full responsibility for the implementation of the plan.

The Information System

While conducting our initial interviews we were sometimes startled to learn that some area employers had previously been served to a greater extent by the College than we realized. It was apparent that our data on these matters was dispersed and disorganized. Previous contacts had been made individually by a variety of College personnel and there was no central data bank to tell us what had transpired previously.

We decided to capture immediately the data which we were collecting through our assessment activities and to build a file on each employer we contacted. Periodically this file would be updated and if a reassignment was made within the College, the file would be transferred to the newly assigned project leader. We plan to set up this information system on our central computer in the future since all campuses are linked to this system.

We now had what we considered a satisfactory follow-up procedure to respond quickly to employer needs which were identified during our assessment project. Only time would tell whether or not the plan would work.

Resulting Services and Instruction

As of January 1984, the College already had developed twenty-five courses in the current fiscal year with twenty area businesses through its continuing education unit. Most of these courses were developed as a result of the CAP project. This compares to thirteen courses for all of FY '82. In addition to the twenty-five courses we now have underway or have completed, another twenty-two courses have been proposed for other major employers.

The College's credit division personnel also have been working with many of the employers contacted via CAP. They have been generating some interesting results such as the placement of College secretarial students in jobs at IBM. Also, the Rockville Police Department has been using the Rockville Campus' Physical Education facilities for training police. A seminar on Digital Communications Networks and a seminar on Local Area Networks were held this spring for employees of General Electric Information Services Company. Also, credit courses are being taught at area employers in such areas as microcomputers, word processing and technical writing.

Current Situation

Quarterly reports from the follow-up teams update the Academic Vice-President on the ongoing contracts, plans, and developments related to each of the employers. As mentioned earlier in this report, we had learned that the cohesive approach to the county's employees required a client-centered concept which responded to the employer's needs, not those of the College's organization. Therefore, the credit and non-credit personnel have continued to focus their efforts on the client's needs and thereby identify more clearly the administrative and organizational impediments to serving this clientele. This approach has cemented a working relationship among the individuals from the three campuses and the continuing education unit and essentially simulated a matrix management organizational effort.

Further Areas of Improvement Planned by the College

While follow up activities continue, the ad hoc group of off-campus credit coordinators and non-credit personnel have identified needs which must be addressed by the college to more effectively serve its clients. Some of these recommendations include:

1. The rating of each client as to the probability of its using Montgomery College's services.
2. The retention of all articles regarding a client in the client's file.
3. The production of a general brochure describing the credit and non-credit services the College offers to employers.
4. The inclusion of off-campus credit and non-credit personnel in more on-campus activities regarding employers.
5. The division of credit courses into one credit modules and the offering of competency based credit courses.

BIBLIOGRAPHY

The Demand for Continuing Education: Findings From A Community Survey - Technical Report for Montgomery College, Henry M. Brickell and Carol B. Aslanian, April, 1983.

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"MEGATRENDS" FOR TEACHING IN HIGHER EDUCATION

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The society of the 1980's is considered one where changes in economic, social, personal and educational forces are considered an ever increasing and more dominant characteristic of our lives [4,5]. The professional field of teaching in higher education is logically affected by these changes

Faculty and administrators of universities, as an academy, must view this phenomonon with a focus on long range, strategic planning. This planning process results in action plans that reflect an awareness of environmental opportunities and threats. This position is clearly supported by the brochure for the Improving University Teaching conference which states:

> Colleges and universities throughout the world are in increasing competition for limited finanical resources. More and more, government is holding higher education closely accountable for its performance. The emphasis is on productivity. For universities, productivity is determined largely by the volume of faculty research. For institutions that emphasize teaching, productivity too often is measured by number of students rather than by what and how well they learn.
>
> In short, there is much to distract the higher education community from its most important mission: teaching. We have seen that student achievement does not always reflect institutional goals. The quality of teaching is the key.

Environmental Scanning

The strategic planning process for an organization is related to a clear definition of the organization's mission. One of the analytical elements in a strategic planning process focuses on an understanding of organization characteristics, and its relationship to the organization's environment. The rapidly changing social, economic, personal, and educational forces which surround university teaching provide strong justification for an environmental scan.

An environmental scan can take many different formats and be based on a number of different perspectives. In addition to numerous published predictions [1, 2, 4, 5], there are a wide variety of analysis formats which allow for a free flowing analysis of environmental trends for a particular field or organization. John Naisbitt's best selling text, Megatrends, identifies one possible set of predictions which could serve as the basis for an environmental scan in the field of college teaching. Naisbitt's analysis of articles and news bits from hundreds of newspapers around the country provides the basis for his ten "Megatrends." They are apparent trends, conclusions based on the data that he has collected. The "Megatrends" are open to debate and possible modification. Because of their popularity and controversy, they serve as a strong starting point for a critical evaluation of environmental issues.

MEGATRENDS

Naisbitt's trend analysis is based on newspaper content analysis of the daily newspapers of cities in the United States with populations greater than 100,000 plus papers covering all state capitals. Researchers clip local news items, sort them in 13 broad categories, into 1200 additional subcategories, count lines, and analyze changes in behavioral patterns. The result is the identification of broad emerging trends. Naisbitt's popular "Megatrends" are ten forces which he believes are already reshaping our world. Naisbitt does not believe that these trends can be stopped but he believes that contemplation about them and their effects will allow organizations to strategically plan in anticipation of change.

Research Studies

Questionnaires containing the ten "Megatrends" and an analysis format which assesses the probability of the trends were distributed to the College of Business Administration faculty at Marquette University, to the membership of the Association for Business Simulation and Experiential Learning (ABSEL), and to executive members of the American Society for Training and Development (ASTD). ABSEL is an international organization of business education dedicated to effective teaching through active learning techniques. The focus of the ABSEL response was on the specific field of college teaching through business simulation and experiential learning. ASTD is a national organization of organization training specialists. One of ASTD's recent concerns has been the move of corporate training functions into the degree granting enviroment of higher education.

Table 1 provides a summary analysis of the "Megatrends" ranked in order of combined probability impact ranking. Both groups of college teachers, and the organization trainers identified the first "Megatrend," the shift from an industrial to an information based society, as the most important to its own activities.

Comparative Measures

The "Megatrends" probability impact analysis was used with the faculty of Marquette University's College of Business Administration as part of the College's long-range strategic planning process. In all settings where Naisbitt's "Megatrends" are discussed, the process provides serious discussion, controversy, and interesting, action-oriented material. The analysis conducted by the College of Business Administration faculty focused on business education in one College. Table 2 presents the probability and impact of the "Megatrends" with comparative scores for the MU faculty, the ABSEL response, and the ASTD response. Given that it would be possible to predict possible differences in the scores, given the perception of a specific college faculty versus broader groups concerned with simulation and experiential learning and training and development, and considering the fact that we

Table 1

"Megatrends" Summary

Megatrend	Combined Prob. -Impact Ranking	
1	2	We are in a "megashift" from an industrial to an information based society.
10	4	We no longer live in an either/or, chocolate or vanilla world; people have demanded and are getting a multitude of choices.
3	7	Our economy is becoming part of a global structure moving away from isolation and national self-sufficiency. As a result, we will no longer be the world's dominant force.
9	7	The North-South shift in the United States is real and irreversable for the forseeable future.
2	10	For every high-technology action, there is a "high-touch" reaction, or the technology will be rejected.
7	13	Citizens, workers, and consumers are demanding and are getting a greater voice in government, business and the marketplace.
8	14	We are moving from hierarchies to networking; the computer is smashing the pyramid.
5	17	Our centralized structures are crumbling. We are decentralizing and growing stronger from the bottom up.
4	18	U.S. corporate managers are beginning to think about the long term rather than the next quarter.
6	18	We are reclaiming our traditional sense of self-reliance after four decades of looking to institutions for help.

are looking for input into a process rather than specific conclusions, a rather liberal interpretation of significance, less than or equal to 0.10, was used to determine statistically different means. ABSEL members, with their preferences for experiential teaching techniques, viewed the probability of the information based society as more likely to occur, viewed the self-reliance characteristics are more likely to occur, and gave higher weights to the computer smashing the pyramid and multiple choice trends. ASTD leaders also placed a higher value on the information shift. They saw the shift to long term thinking having a greater impact on training and saw a greater impact in the increased choices.

TABLE 2

	Probability			Impact		
	M.U.	ABSEL	ASTD	M.U.	ABSEL	ASTD
Information Shift[1]	67.6	77.4	82.5	5.18	5.23	5.58
High Tech-High Touch	54.0	63.6	66.9	3.70	4.15	4.40
Global Economy	60.2	67.9	71.3	4.23	4.38	4.40
Long Term Thinking[1]	44.3	49.7	54.3	3.74	3.54	4.40
Decentralization	43.9	48.0	59.3	3.62	3.91	4.28
Self-reliance[1]	40.2	50.8	61.3	3.26	3.37	4.35
Greater Voice[1]	52.8	58.8	61.5	4.04	4.03	4.54
Hierarchies of Networking[1]	44.2	59.1	63.0	3.84	4.59	4.48
North-South Shift[1]	58.7	67.7	58.9	4.56	3.68	3.50
Multitude of Choice[1]	52.6	73.7	79.1	3.76	4.86	5.12

[1] Significant Differences at <.10

THE RESPONSES AND PREDICTIONS

The data supplied by the Marquette, ABSEL, and ASTD research provides significant input into an examination of environmental trends for university teaching. While the three organizations surveyed are very different, they are organizations with strong emphasis on the teaching component. Marquette University is an organization that represents a teaching-research institution. While research is important, teaching is stressed and research must be expressed through improved, innovative teaching. ABSEL is a teaching organization dedicated to the development of research and teaching innovation in business education. ASTD focuses on teaching in the organizational environment. Speculation on how the findings of these three groups might relate to the broader field of university teaching is a relatively easy bridge to construct.

The "Megatrends" idea is relatively new and consequently, specific activities dealing with these issues have been minimal in the field of university teaching. As a profession, university teaching faces critical decisions about its activities in light of the "Megatrend" analysis. Implementation of action planning should take the field of university teaching into the world of

"Megatrends." It will allow the field of university teaching to take its own steps into the world of the future.

University teaching, as a profession, must practice two of the key concepts identified in the best selling In Search of Excellence. [3] We must adapt techniques for increased communication about what we do and we must clearly adopt a bias for action that causes us to take steps to deal with those "Megatrends" that we see impacting significantly on the professional field.

Bias for Action

The "bias for action" in terms of the "Megatrends," follow the analysis of the impact probability of the individual megatrends. The following actions can be discussed and speculations can be proposed concerning the future of university teaching.

Megatrend #1: We are in a megashift from an industrial to an information based society.

There is a need for a shift in emphasis from examples which focus solely on production of goods to those which focus on services. There is a need for the creation of new materials that reflect the heavy focus on the service factor. With a majority of students entering service sector organizations, education will better prepare them for an environment in which they will function if we shift our emphasis slightly from industrial to information based organizations.

Megatrend #10: We no longer live in an either or, chocolate or vanilla world; people are demanding and are getting a multitude of choices.

The increase in demand of choices is critical in university teaching. University teaching can no longer totally depend on the traditional lecture--textbook format. Corporations are providing alternative educational resources that have the potential to compete with institutions of higher learning. In this different framework, faster, higher technology solutions may be available. University teaching needs to respond. Alternative teaching strategies will need support and encouragement. Faculty must work with publishers to create financially successful products which do not demand large production runs. Materials need to be produced, like the popular "menu driven" personal computer programs with multiple options for modification and use.

Megatrend #3: Our economy is becoming part of a global structure moving away from isolation and national self sufficiency. As a result, we will no longer be the world's dominant force. (U.S.A)

Unversity teaching, most importantly in the USA, needs to continually move towards more of an international focus and to include more examples which include recognition of cultural, economic, and organizational differences. As the cry for broader and broader internationalization of curriculums like business increases, teaching needs to focus on these elements. One possible plan of action would be to hold an annual panel on international issues which would include how existing materials could be modified to include international elements.

Megatrend #2: For every high technology action, there is a high touch-reaction or the technology will be rejected.

College teaching has generally fallen short although some organizations like ABSEL have attempted to be on the cutting edge of this trend for several years. Technology is going to be forced into higher education. If college faculties do not lead the way, they and/or their universities will follow the wave. Faculty development is too brief a term to describe the kinds of support needed to meet this trend. Resources are needed to provide dollars for faculty development, consultants to assist in new approaches, and to provide what may sometimes seem unlimited hardware and software.

Megatrend #7: Citizens, workers, and consumers are demanding and getting a greater voice in government, business, and the marketplace.

The consumer movement of the 80's will have a different impact on higher education. In the 60's it was relevance, in the 80's it will be accountability. The 60's was relevance for itself; the 80's will be relevance for society.

Megatrend #8: We are moving from hierarchies to networking; the computer is smashing the pyramid.

Universities and teachers need to increase networking and sharing of information. A broader sharing of research is needed to lay a more solid foundation for our activities. Increasing implementation of the computer into what we do and how we do it with greater use of the personal computers and greater use of student activity work with the computer will support our ability to work within the framework of the trend.

Megatrend #4: U.S. corporate managers are beginning to think about the long-term rather than the next quarter.

Professional schools need to continually emphasize the liberal arts as critically related to the professional discipline. Education for tomorrow's job will remain valid because functional skills can be taught as part of professional curriculums. But tomorrow's job, per se, may not exist and students must be taught for jobs that do not currently exist. The liberal arts will provide students with essential long range skills.

Megatrend #6: We are reclaiming our traditional sense of self reliance after four decades of looking to institutions for help.

There is a need for creative thinking in this area. In addition, there is a need for identification and implementation of ways in which the self reliant decision maker can function within the traditional higher education system. Perhaps there has been too much of a focus on group decision making and group activities. Consequently there is now a need for greater individual decision making within the organizations and society.

SUMMARY

The directions for college teaching identified above are meant to be clearly one perception based on two samples analyzing the "megatrends". In fact, it is the fraternity itself which will have to identify and decide the directions it will take as a result of this analysis.

REFERENCES

[1] Diebold, John. "Management, Circa 1990, "*Enterprise*, February, 1983, pp. 10-13.

[2] Naisbitt, John. *Megatrends* (New York: Warner Books, 1982).

[3] Peters, Thomas and Robert H. Waterman, Jr. *In Search of Excellence* (New York: Harper and Row, 1982).

[4] Toffler, Alvin. *The Third Wave* (New York: William Morrow and Company, Inc., 1980.

[5] Toffler, Alvin. *Future Shock* (New York: Bantam Books, 1971).

STUDENTS AND WRITING

SATURDAY, 7 JULY

0900 - 1030

PSST...DO YOU KNOW WHERE I CAN FIND...?
TEACHING RESEARCH TECHNIQUES TO JOURNALISM STUDENTS

Claudia M. Caruana
Long Island University

With good reason, there is emphasis on reporting, writing and editing skills in most journalism and communications arts courses today. Tomorrow's journalists, who will have to work with seasoned professionals as well as technical area specialists in an extremely competitive field, must have the necessary work skills to survive. There is little room for "armchair" journalists who lack skills or have minimal exposure to the demands of the profession.

Often overlooked or neglected in some journalism undergraduate

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curriculums, however, is library usage and research skills. Research is an important component of most media positions, be it in news reporting and writing, television or radio reporting, magazine editing and writing, public relations, or advertising. Journalists are often called on to find facts and substantiate information as well as gather news. Those individuals working in editorial positions may be responsible for verifying the accuracy of material--in the form of stories, news releases, reports, quotations, or speeches--provided by other journalists, writers, or outside sources. Such checking of information can often circumvent libel, invasion of privacy, copyright infringement, embarrassing, bogus stories (the "Jimmy's World" Pulitzer Prize hoax is an extreme example), or other legal challenges, such as the recent one with the Barbara Hutton book and the "14-year-old" physician who was supposed to have treated her. Fact checking is considered an integral component of the journalistic process of putting words into print or on the air.

Diane Lore, education editor of the Staten Island (N.Y.) Advance, says that research skills can not be overemphasized. "A reporter out on a story may have to obtain background information or additional facts that were not given. He or she has got to know how to do that in a hurry."

A public relations vice president for a large corporation based in New York who was attending a journalists' convention in Milwaukee, Wis. several years ago, reports that in his experience, "many public relations practitioners may be excellent with the marketing or technical reports, but when it comes to getting information that can be located at the public library around the corner, it's a different story."

There has been a tendency for many instructors to "shy away" form discussing research and reference sources in the classroom. In some instances, it is a matter of an already-ambitious curriculum that has little room for an additional component. Often, instructors believe that general library usage sessions, provided by university staff librarians, are sufficient for the type of course materials with which their students will be working during the semester.

Most library orientation sessions are adequate, but are usually given during the freshman year, often during the first weeks of classes. Unless a student is a frequent library user, much of what is covered in these sessions can be forgotten or even ignored. To their credit also, many libraries provide users with pamphlets on how to find information as well as audiovisual presentations on library usage and reference sources. The success of such programs, however, often depends on the initiative of the students who choose whether to make use of it.

There is little doubt that the best reference tool, in the words of Andrew L. Hansen, Executive Director, Reference and Adult Services Division, the American Library Association, "is a librarian," but there will be instances when a student, and later, a member of the working community, will be required to obtain information on his or her own. This is especially true when budgetary cutbacks reduce library staffs and available hours for library use.

To encourage student library use and the art of finding information, several instructors have tried innovative methods and class assignments. David B. Reddick, a professor of public affairs at Central Michigan University, requires his public affairs students to answer a series of questions, which he places on individual index cards during a class period set in the university's library. Reddick is available during the class period to insure individual student work and answer questions.

In this instructor's experience with communications arts and journalism students at Long Island University and other universities, discussions on finding information, especially information that can be found in reference sources, has been met by resistance or disinterest. Comments from students have included, "We don't need to know how to use the library--a librarian is always there to help." "This is going to be boring." "I already know how to find things there now." "I attended the library orientation session when I was a freshman. Who do I have to go through it again, now?"

Unfortunately, most students in my classes need more than a refresher on information retrieval techniques. A more accurate description of what is called for is a basic orientation, pointing out specific reference sources and the type of information the student, and later the journalism professional, will need.

To prove my point, I have prepared a 15-minute, 25-question reference, Exhibit 1. This reference quiz, whose answers have been checked for accuracy by several librarians, asks students to provide only the *reference source(s)* where the information could be found, not the correct answer. As an incentive and point of interest, I offer the students who answer more than 20 questions correctly a free dinner at a local restaurant. (I have made this offer for several years, and to date, have not paid for anyone's dinner.) It should be noted that such a reference quiz, with the assistance of library professionals, can be tailored to specific academic fields.

What does a "warm-up exercise" do for students? First, it provides an entree for discussing the need to know how to uncover information quickly. The instructor, can at that point, recommend books such as Alden Todd's Finding Facts Fast, which show students how to obtain the information they might need. Also at this time, the instructor can provide a listing of reference sources applicable to the students' field of study.

Second, once students realize that they may not know as much as they think they know, they are more conducive to one or more sessions on research, either presented by the library staff or instructor in conjunction with the library staff. An outside practitioner, depending on the focus of the class--newspaper, magazine, public relations, broadcasting or advertising--can be called in to discuss how she or he researched a particular project or story.

To make certain students understand and use reference sources, a series of 15 questions, where information being sought must be provided as well as its source and the page where it is located (similar to Reddick's in-class library assignment), is given as a homework assignment. Questions for such homework assignments can be developed in conjunction with the university's library staff.

With few exceptions, assignments completed by students are well-researched and correct. Alternative sources of information often are found by students, and this has been used for follow-up discussions about research and reference tools.

Another type of assignment that can be given to students after such a research component, and has worked well for this instructor's students, is an instructor-created "bogus" story. The story need not be elaborate or long. Sufficient for such assignment is a 1,000-word story with errors in facts, dates, places, titles of people being quoted, or conflicting data.

Questions, similar to those given on the initial reference quiz (Exhibit 1), are included on the midterm examination, with the instruction that only the probably source of information be given, not the answer. Students, after their exposure to the lecture(s) on research as well as homework assignment, usually do well on this portion of the examination.

Knowing how to find information is important to all students, not just those enrolled in journalism or communications arts classes. By using innovative techniques to encourage the use of reference and research tools, instructors can help their students find the facts faster.

# # #

Exhibit 1.

Please provide the source or sources of information where the answers to the following questions can be found. Remember, you are not required to provide the answer to the question, only where the information for that answer can be found. You have 15 minutes for this quiz.

* * *

1. Name the only Icelander to win the Nobel Prize for literature.

2. Name the owner of the Ko Rec Type^T trademark.

3. Describe market conditions in the microcomputer industry today.

4. Give the number of civilian U.S. plane crashes in 1982.

5. Name the first Black foreign correspondent.

6. Provide the names, addresses, and telephone numbers of organizations specializing in mental retardation.

7. Provide career highlights about retired newsman, Walter Cronkite.

8. Name the American state that produced the greatest amount of navy beans in 1982.

9. Name five American manufacturers of photovoltaic panels.

10. Provide the names and addresses of companies that issue mail order catalogs on gourmet foods.

11. Provide the name and telephone number of a U.S. government specialist on Greenland affairs.

12. Provide the names and locations of four major American cancer centers.

13. Give the party composition of the 1983 U.S. House of Representatives.

14. Provide the requirements for contest entries to the Mark of Excellence Awards, sponsored by The Society of Professional Journalists, Sigma Delta Chi.

15. Give the date Malta obtained its independence from Great Britain.

Exhibit 1. (cont.)

16. Give the cost of a four-color, one-page advertisement in Chemical Engineering Progress magazine.

17. Provide the names and addresses of 15 radio programs that feature discussions about books.

18. Name the first American baseball player inducted into the baseball Hall of Fame.

19. Provide a list of recent articles in the popular press about the synthetic estrogen, diethylstilbestrol.

20. Give the date of Elizabeth Taylor's birth.

21. Provide the titles of 10 forthcoming books on word processors.

22. Name the school color of Syracuse University.

23. Give the significance of December 6, 1907.

24. Give subsidiary locations and key personnel of the Monsanto Company.

25. Give the names and college affiliations of three professors specializing in Nigerian art.

# # #

References

Caruana, Claudia M. "Get the Most Out of Your Research Time," Writer's Digest, May, 1982, 26-32.

Reddick, David B. "Library Assignments Help Students," Journalism Educator, 1981, 36(3) 37-38.

Todd, Alden. Finding Facts Fast, second edition, Berkeley, Calif., Ten Speed Press, 1979.

Conversation with William P. Mullane, Jr., at the Society of Professional Journalists, Sigma Delta Chi, annual convention, held in Milwaukee, Wis., November 10-13.

Telephone interview with Andrew L. Hansen, executive director, Reference and Adult Services Division, American Library Association, December 7, 1982.

Telephone interview with Diane Lore, education editor, The Staten Island (N.Y.) Advance, January 25, 1983.

# # #

JOURNAL WRITING: A DECADE OF RESEARCH AND APPLICATION

Paul Hettich

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This writer first used the journal technique in 1972 in response to student pleas for "relevance" (a plea often heard in the '70s). His experiences with this technique have been reported (Hettich, 1974, 1976) and evaluated (Hettich, 1980(a), Price, 1982). Journal writing remains a valuable teaching/learning tool for the 1980s, not only for the reasons contained in his reports, but also as a response to two new pleas: teach students to write; and encourage students (especially adult re-entry students) to share their experiences. This paper will: (1) describe how the journal technique is used; (2) assess its impact on students and teachers; and (3) identify other settings in which this technique is used.

Journal Writing Procedures

A thorough review of journal writing and other forms of autobiography which are used in education, personality research, psychotherapy, and literature may be found in Price. Allport's concept of the topical biography (Allport, 1942) best defines the journal as it is used in this paper: a short, discontinuous personal document which contains excerpts from a special class of events -- material learned in a psychology course. Because the journal is intended to partially individualize the undergraduate psychology course, it is described to students as a means of connecting the information which they acquire from the course to their experiences. Appendix 1 (Transparencies 1 and 2) contains the guidelines and one page of sample entries that are distributed to students on the first day of class. Although the guidelines structure the writing process, they leave ample room for spontaneity and creativity. Note that in the Procedure section of the Guidelines, journal entries are categorized as examples, applications, analyses, evaluations, and syntheses. These categories are deliberately included in the Guidelines because they parallel Bloom's Taxonomy of Educational Objectives in the Cognitive Domain (Bloom, 1956). This approach to thinking about and writing journal entries is explained in detail to students enrolled in the Psychology of Learning course.

Students are also informed that the quality of their writing skills will influence their grade. The teacher makes corrections and suggestions in the journal, but those students whose skills are seriously deficient are referred to the college writing center. Student reactions to the journal as a writing assignment have not been systematically collected, but many do appreciate the opportunity to refine their writing skills or to reinforce their creative writing interests.

What Students Think About the Journal

Nearly all students can write a journal of satisfactory (or better) quality,although less than a third have prior experience with journal writing. A few students report difficulty writing the first few entries; others procrastinate and write their entries the night before the journal is due.

Table 1 (Transparency 3) summarizes 367* student responses obtained from nine different undergraduate Psychology courses to seven items contained in a questionnaire administered at the end of the semester. On a seven point scale (7 = very much and 1 = not at all) the journal was most highly rated as a means of stimulating critical thinking ($\bar{x}$=5.82), as a source of feedback about learning ($\bar{x}$=5.71), and as an aid to the self-directed expression of learning ($\bar{x}$=5.62). The journal is perceived as a valid measure of learning ($\bar{x}$=5.17), but not strongly as a source of motivation to learn ($\bar{x}$=4.87). Finally, journals are a supplement to exams ($\bar{x}$=5.21), not as a substitute ($\bar{x}$=3.77) for them.

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*data from about 40 additional students will be added by June of 1984.

When students are polled about their preference for writing a journal or a term paper, 95% of them choose the journal because: (a) it includes more topics than a term paper; (b) it represents a personal application of the subject matter (Psychology); (c) journal entries are written throughout the course, not during the last days or weeks of the semester; or (d) journals are more interesting and stimulating than term papers. These answers may be disconcerting to some teachers, and it may be unfair to compare term papers with journals. However, these student opinions are certainly of some interest to those of us who require a writing component to their courses.

What Teachers Think About the Journal

A survey was mailed to 34 teachers who had requested a reprint of the writer's articles. Of the 20 who responded, 12 (60%) used the journal at least once primarily in introductory and practicum courses. The journal received its highest ratings as a supplement to exams and papers ($\bar{x}$=5.78), as a supplemental measure of learning ($\bar{x}$=5.64), and as an additional source of feedback about student learning ($\bar{x}$=5.54). But the journal is not a substitute for exams and papers ($\bar{x}$=2.91), although considerable differences of opinion were expressed (SD=2.31). When teachers were asked what percentage of the total course grade should be allotted to the journals, the median reported was 25% (range = 10% to 100%). Essentially, these findings concur with the writer's belief that the journal is best used as a supplement to other measures of learning.

Generally, the teachers regard the journal as a means of self-expression for students ($\bar{x}$=5.0), as a source of motivation ($\bar{x}$=5.0), and, to a lesser extent, as a way to stimulate critical thinking ($\bar{x}$=4.8). Students differ widely in their attitudes toward and ability for writing journals. As one teacher remarked on this point: "Great for some students, poor for others; extremely variable response from the students." Subsequent research on journal writing, such as Sell's assessment of extraversion and neuoriticism in students who choose to write autobiographies (Sell, 1978), should focus on individual factors that correlate with well-written journals.

When the teacher-respondents were asked what they most liked about the journal technique, they replied that: the journal permits the teacher to monitor development, journal writing legitimizes the students' private agenda and makes it an integral part of the learning experience; and the journal helps students form connections between concepts studied in class and everyday experiences.

Teachers were nearly unanimous in what they liked least about the journals: Too much time is required for reading them and writing comments. Consequently, the journal writing technique is recommended for classes with 30 or fewer students unless teaching assistants are available to share the responsibility in larger classes. Some of the suggestions which teachers offered include: Give clear directions; give concrete examples of what is expected; use the journal first on a small number of students; and provide feedback to students.

Other Applications of the Journal Technique

The examples below sketch other settings familiar to this writer where the journal has been or is being used as a teaching/learning technique in college and university settings.

1. Students in an undergraduate dance course keep a journal to record and evaluate their experiences during rehearsals and performances, to record their observations about other dancers' movements and attitudes, and to express their feelings.

2. In a graduate speech course on discussion techniques, the journal permitted the professor to: (a) teach students how to write plans for discussions and how to record observations; (b) observe how students completed these activities; and (3) evaluate students' knowledge and skills.

3. Students enrolled in an undergraduate course on group dynamics, communications, and leadership skills completed a Personal Reaction Log consisting of four categories: experiences in class, behaviors observed, feelings, and thoughts.

4. Graduate students enrolled in a course on evaluation research keep a journal using models developed for program evaluation described in Hettich (1980b).

5. In his graduate course on change and organizational behavior, a Business professor requires students to maintain a journal that integrates course content with job related experiences, emphasizing how a job related event affects self and others, feelings involved, and the actions taken to deal with the event.

6. A supervisor of clinical internships requires students to write about significant experiences. Subsequently, the journal is used as a basis of discussion during conferences with the supervisor.

(I will bring copies of my published articles, for distribution; I look forward to making an informal presentation).

References

Allport, G.W. *The use of personal documents in psychological science*. New York: Social Science Research Council, 1942.

Bloom, B.S. (Ed.) *Taxonomy of educational objectives*. New York: Longmans-Green, 1956.

Hettich, P. The journal: An autobiographical approach to introductory psychology. Paper presented at the two year college session of the Midwestern Psychological Association, Chicago, May 1974.

Hettich, P. The journal: An autobiographical approach to learning. *Teaching of Psychology*, 1976, *3* (2), 60-63.

Hettich, P. The journal revisited. *Teaching of Psychology*, 1980, *1* (2), 105-106. (a)

Hettich, P. The evaluators journal: A qualitative adjunct to program evaluation. *C.E.D.R. Quarterly*, 1980, 13 (2), 19-22. (b)

Price, J.R. Therapeutic and Educational Effects of Writing an Autobiography in an Undergraduate Developmental Psychology Course. Dissertation presented to Graduate Council of North Texas State University, Denton, Texas, May 1982.

Sell, I.M. Extraversion, neuroticism, and choosing to write autobiographies. *Teaching of Psychology*, 1978, 4, 180-182.

Appendix 1 (Transparency 1)

GUIDELINES FOR JOURNAL WRITING FOR PSYCHOLOGY OF LEARNING (Psy. 300)

Purpose of the Journal

The objective of journal writing is to encourage you to relate and connect the facts, concepts, ideas and principles thatyou acquire from this course to your past and present experiences: coursework, employment, books and articles read, TV and films, conversations and discussions, and self-reflections. The journal is an autobiographical technique* which individualizes this course (in part), and consequently, makes it more personally meaningful. Journal writing encourages you to apply what you learn in the classroom to other areas of your living.

Procedure

Purchase a spiral notebook and use it solely as the journal. Write at least two entries a week, beginning each on a separate page, and dating them. Journal entries may (but need not) parallel the specific material that is covered in class that week orthe previous week. Sample journal entries written by students such as yourself are shown on the following pages. Note that some entries (1,6,7,8) are examples or illustrations of a learning concept. Each indicates that the student comprehended a particular concept by giving an example of it. Other entries (2,4,5) show that not only did the students comprehend the concept but also that they applied or demonstrated it. Entry 3 shows a brief analysis of a theoretical concept. A journal entry could also be an evaluation or a synthesis of learning concepts.

You may write these and other types of entries as long as the entry is firmly anchored to an idea or concept presented in the course, and not a vague or general association with the terms presented.

Try to vary the types of entries that you write. Be spontaneous and free in the expression (the style) of your thoughts. You will be surprised to discover that you can connect many of the abstract psychological concepts of learning to your thoughts and experiences. The last two journal entries attached discuss journal writing.

Evaluation of the Journal

Turn in your journal sometime during the first three weeks of class so that I can read it and provide feedback, and again at the close of the semester. I may call for it on other occasions. The journal will comprise about 20% to 25% of the final grade. It will be evaluated on the basis of the quality, depth, and versatility of your thinking and, secondarily, on the number and/or length of the entries.

Most students have never written a journal for a college course. Yet, all who have seriously tried have succeeded.

*Hettich, P. The journal: an autobiographical approach to learning. Teaching of Psychology, 1976, 3, 60-63.

Hettich, P. The journal revisited. Teaching of Psychology, 1980, 7, 105-106.

Appendix 1 (Transparency 2)

1. Stimulus generalization
   There is a small boy around in the school. One day he called me "Lulu." I was very surprised because I do not know him. Later I learned that there is another Chinese girl around in the school by that name and he knew her. So whenever he sees other Chinese girls, he called them "Lulu."
   I think this would be an example of stimulus generalization. The little boy has associated the name "Lulu" with the certain looks and features of Chinese girls and he tends to generalize to all Chinese girls. J.C.

2. I performed Piaget's experiment using glasses of water as he did the lemonade. There were a number of children in our yard so thought it would be fun and interesting. I was very surprised at their answers.
   One three year old, one six year old, three ten year olds, and an eleven year old took part in the experiment. I started out with three glasses of different width and height but all containing the same amount of liquid. From the three year old to the eleven year old they all chose the wider glass. I called them in individually and continued adding glasses both wider and taller. In all I used ten different sizes. When I at the last time added a small wide glass bowl the six year old chose that as definitely being the one! The ten and eleven year olds remained with the same original glass they chose. All were amazed and did not possibly believe they all held the same amount. They insisted on seeing for themselves which I showed them.
   C.H.

3. If all behavior were the result of the knowledge of the consequences of that behavior, then one would think fewer people would commit crimes than actually do. According to Skinner, a response is necessary for a certain stimulus to occur. Thus, if an individual knew what the consequences of a particular behavior would be, such as imprisonment for committing a crime, and if this stimulus were not desireable, then why does the response occur to being with. Possibly the reward of the crime itself surpasses that of the idea of imprisonment and this spurs the individual into action. M.E.

4. Last Sunday was an extremely hot and humid day. Before I had realized it, I had utilized Premack's Principle by stating to my husband, "if we want to go out in the boat (high frequency behavior) - a frequent summertime pleasure, then we must first straighten up the house (low frequency behavior). M.B.

5. I have discovered a way to apply my learning theories and psychology to my Educational Foundations course. The articles in Literature of Learning by Johnston are criticisms of the educational doctrines and practices over the years. As I read each one for Ed. Foundations class I shall try to discover what learning theory and psychology from my morning class is being used. For instance Plato's Allegory of the Canes was a good example of the Humanistic discipline approach. Dicken's M'Choakumchild's Schoolroom is a good example of Thorndike's "stamping in" process. B.S.

6. Have you ever noticed how many of our TV ads use active avoidance learning to sell a product? The Solarcaine one for sunburn is great. The beautiful girl on the beach gets burned. But if she uses Solarcaine she can avoid being burned. And then they throw in a positive reinforcement - if she's beautifully browned because she's used the Solarcaine the handsome man is attracted to her.
   B.S.

Table 1 (Transparency 3)

Student Ratings of the Journal[1]

Item	Cognition n=5	Consumer n=73	Effective Study n=23	Experimental n=24	General n=121	Industrial n=33	Learning n=76	Physiological n=6	Statistics n=6	Total n=367
To what extent is/does the journal:										
valid measure of learning	x̄= 5.40	5.29	5.61	4.33	4.98	4.96	5.55	5.00	5.67	5.17
	x= 1.20	1.51	1.01	1.82	1.61	1.50	1.01	1.00	.94	1.47
source of feedback about learning	x̄= 6.40	5.53	6.22	5.08	5.74	5.33	6.05	4.50	6.17	5.71
	s= .80	1.38	.93	1.85	1.35	1.62	1.04	1.80	.69	1.38
stimulate critical thinking	x̄= 6.60	6.20	4.83	5.46	5.75	5.39	6.09	5.83	6.5	5.82
	s= .49	.89	1.93	1.53	1.47	1.98	1.13	1.07	.5	1.43
assist in self-directed expression of learning	x̄= 6.20	5.81	4.70	5.29	5.55	5.17	6.08	4.83	6.33	5.62
	s= .98	1.37	2.35	1.62	1.45	1.87	.91	1.52	.74	1.55
source of motivation to learn	x̄= 6.00	4.80	5.26	4.29	4.67	4.91	5.29	3.50	5.67	4.87
	s= 1.26	1.70	1.25	1.77	1.52	1.56	1.39	1.61	.94	1.57
supplement to exams	x̄= 6.60	5.35	4.78	4.26	5.11	5.23	5.62	4.50	5.5	5.21
	s= .49	1.52	1.21	1.89	1.69	1.74	1.50	1.89	.96	1.64
substitute for exams	x̄= 3.60	4.39	4.00	3.21	3.30	3.88	4.19	2.83	2.33	3.77
	s= 1.02	1.74	1.38	1.82	1.73	1.82	1.69	1.07	1.60	1.78

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[1] Includes data reported in Hettich (1980a).

NOTE: By June, 1984, additional data from Consumer Psychology and Senior Seminar courses will be added to this table.

WRITING ACROSS THE CURRICULUM AND STUDENT DEVELOPMENT THEORY: MAKING SOME CONNECTIONS

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Introduction

In 1980, in an overview of the field of student development theory, L. Lee Knefelkamp wrote:

> During the last decade we have witnessed the rediscovery, creation or validation of a great diversity of theories of student development.... Perhaps never before in the history of higher education have students and their development been so thoroughly examined.[1]

In this article, Knefelkamp argued that the models of student development articulated by people like Chickering, Perry, Sanford, Vaillant, R. Heath, D. Heath, and other researchers, most of whom are drawing on and building on the adult development theories of Erikson and Piaget, offer to college administrators, counselors, and faculty "the possibility of a common context through which to view and understand our students and a common language with which we can communicate about them."[2] Quoting William Perry, Knefelkamp reminded her readers that "faculty development begins with an understanding of student development; students are our common purpose."[3]

Unfortunately, despite the impressive activity in the field outlined by Knefelkamp, and despite her compelling appeal to faculty to look to student development theory as a resource in designing more effective teaching strategies and learning environments, most academics I have talked to know nothing about it. They haven't heard of —much less read-- Chickering, Perry, or the Heaths, or any of the other researchers who spend their lives studying and counseling students. Or, if they have heard about student development theory, they assume that it is, and ought to be, the special province of counselors and administrators whose major concern is student adjustment and student problems.

Such views—which were, until recently, mine too—now seem to me to be catastrophically myopic: if we academicians really care not only about what we teach but about what our students learn, then student development theory is a resource we cannot afford to ignore. I believe, however, that the situation is changing: the new trend toward writing across the curriculum should—and, I think, will—facilitate faculty awareness of the significance of the research and insights of student development theorists.

The New Composition Paradigm

Many teachers outside the English department still equate the teaching of composition with the teaching of grammar and paragraph organization. They see English teachers as traffic cops of the English language, monitoring the flow of words, catching spelling errors, ticketing comma splices and misplaced modifiers, or, perhaps, forcing students to stay within the lanes of clearly ordered outlines. Furthermore, they think of writing as a skill—like swimming—and assume that the real work of education will take place not in a skills course like composition, but in content courses like philosophy, history, and literature; or, those involved in vocational education may consider their courses in engineering or nutrition or accounting most significant. In any event, most non-English teachers (and perhaps many English teachers as well, who would rather teach literature than composition) assume that if the High Schools had done their job adequately, students wouldn't have to use college time to learn writing skills.

There is, however, a more serious problem than the flawed sentences and paragraphs of novice writers: many students feel that they have nothing to say and do not know how to develop, explore, and analyze ideas. Recent studies indicate that drill and practice exercises and the grim (and boring) emphasis on mechanics and surface correction do not result in any significant writing improvement. Worse yet, worry over spelling and punctuation errors--"error vigilance"--may actually inhibit the flow of ideas which has already been reduced in many of our students to the merest trickle.[4]

When instructors like myself, from fields other than English, are drawn into a writing program as a result of the new emphasis on writing across the curriculum, they discover that the field of composition --once a minor interest even of most college English teachers—has now become a major field exploding with research projects and theoretical discussion. Much of the new work draws on a wide range of disciplines, including psychology, anthropology, linguistics and communications. Moreover, people in the field are not merely building on the research of others; they are also developing their own research. Protocal studies --detailed observation and analysis of both skilled and unskilled writers while they are writing--have led to new insights about the writing process. And these insights, in turn, are leading to significant changes in teaching strategies.

Reviewing what has been happening in the field of composition in an article entitled, "The Winds of Change: Thomas Kuhn and the Revolution in the Teaching of Writing," Maxine Hairston observed that recent developments in composition theory and practice, especially "the move to a process-centered theory of teaching writing," indicate that the "profession is probably in the first stage of a paradigm shift."[5] Teachers who follow the "traditional paradigm," Hairston noted,

> believe that competent writers know what they are going to say before they begin to write; thus their most important task when they are preparing to write is finding a form into which to organize their content. They also believe that the composing process is linear, that it proceeds systematically from pre-writing to writing to rewriting. Finally, they believe that teaching editing is teaching writing.[6]

These teachers "concentrate their efforts on teaching style, organization, and correctness"; too often, they "stress that proofreading and editing are the chief skills one uses to revise a paper," and don't realize that their students have no concept of what it means to make substantive revisions..."[7] In contrast to the traditional paradigm, the new process paradigm conceives of writing as

> an act of discovery for both skilled and unskilled writers; most writers have only a partial notion of what they want to say when they begin to write, and their ideas develop in the process of writing ....Usually the writing process is not linear, moving smoothly in one direction from start to finish. It is messy, recursive, convoluted, and uneven. Writers write, plan, revise, anticipate, and review throughout the writing process, moving back and forth among the different operations.... No practicing writer will be surprised at these findings; nevertheless they seriously contradict the traditional paradigm that has dominated writing textbooks for years.[8]

The "act of discovery" mentioned above is not, in fact, an act; it is, rather, a process. Explaining this, Sondra Perl, one of the first researchers to do protocal studies, cogently contrasted the discovery of a writer with the discovery of an archeologist. The term "discovery," she pointed out,

> ought not to lead us to think that meaning exists fully formed inside of us and that all we need do is dig deep enough to release it. In writing, meaning cannot be discovered the way we discover an object on an archeological dig. In writing,

> meaning is crafted and constructed ....We see something new in our writing that comes upon us as a surprise....Thus when we are successful at this process, we end up with a product that teaches us something, that clarifies what we know...and that lifts or explicates or enlarges our experience. In this way, writing leads to discovery.... ....Those who realize that writing can be a recursive process have an easier time with waiting, looking, and discovering. Those who subscribe to the linear model find themselves easily frustrated when what they write does not immediately correspond to what they planned to accomplish or when what they produce leaves them with little sense of accomplishment.[9]

If we take this seriously, and I think we must, then it should be clear that teaching writing is a far more complex task than most of us outside the field ever imagined.

Teachers Across the Curriculum

The movement toward writing across the curriculum would no doubt fizzle if it meant that all teachers would actually have to teach composition courses. Although some instructors are doing just that, using content from their own specialties for composition topics, the majority are probably not willing to make such a commitment. However, many of us are increasing the number of writing assignments in our own courses and experimenting with different types of writing exercises, with salutory results. We are discovering too, that introducing more writing need not be especially time-consuming or laborious, either for faculty or students. Every writing assignment does not have to be graded in order to be beneficial: not only do frequent ungraded writing exercises increase writing fluency and proficiency, they also increase learning.[10]

Teachers who do assign papers that are to be graded will find in the recent composition literature a variety of suggestions that will improve the quality of such papers. Having read some of this literature, I now alot classroom time for freewriting and brainstorming sessions: students given time to generate ideas have more to say in their papers, and not surprisingly, when they have more to say, their writing improves.[11] I also try to give a paper in stages, to read chunks of the paper before the final draft is due, and to allow time for the student to make substantive revisions as new ideas are generated and developed during the writing process.[12] Yes, all this takes time. However, intervention during the writing process makes for a better finished product, reducing the time needed for reading and grading the final draft. More important, student and teacher benefit from the positive feelings that come with achievement.

One dismaying effect of using frequent writing exercises (graded or ungraded) in content courses is that teachers begin to see how often students misunderstand or misinterpret what they hear in class or read in their homework assignments. I hear teachers comment on this again and again. What they are finding out, of course, is what we all know but try to forget: material taught is not necessarily material learned. Perhaps the most important lesson we are learning from writing in our classes—even writing that we don't grade—is that "writing represents a unique mode of learning—not merely valuable, not merely special, but unique."[13] It helps students clarify and synthesize ideas, improves reading comprehension, and allows teachers—before the midterm or final—to identify problem areas. As more instructors come to see that writing is a tool, that it is, as Elaine Maimon has written, "a way to learn, not merely a means of communicating to others what has already been mastered,"[14] they will be more enthusiastic about participating in writing across the curriculum programs.

Writing Instruction and Student Development Theory

My own interest in student development theory evolved with my interest in student writing. I don't think that this was an accident. Through my involvement in writing instruction, I discovered the studies of Andrea Lunsford and others indicating a clear "connection between poorly developed writing skills and poor self-image, lack of confidence, and lower levels of cognitive development."[15] I read, too, accounts of instructors who designed their writing courses to enhance the cognitive and personal development of their students because they saw significant correlations between student development and writing proficiency.[16] And it was at a conference on writing that I first discovered William Perry. It was his book, *Forms of Intellectual and Ethical Development in the College Years*,[17] that introduced me to the field of student development theory and whetted my appetite to know more about it; although I had been teaching for many years, I hadn't even known that such a field existed.

What recent work in composition teaches us, and what teachers from across the curriculum will learn as they are drawn into writing programs, is how very different writing is from a skill like swimming: clearly, it is tied to cognitive development in a way that swimming is not. No doubt there are competent swimmers with marginal cognitive abilities, but I don't think it would be too audacious to say that no one can write well who is not a good thinker. As more and more instructors come to realize, through their involvement in writing programs, that writing improvement and cognitive and personal development and maturity are all tightly interlaced, they will find in student development theory an important resource. The sine qua non of good teaching, of course, is that teachers must know their own specialties; but while this is a necessary condition for good teaching, it is not sufficient. By helping us to understand our students, student development theory can help us adjust and change our teaching strategies so that more students will benefit from what goes on in the classroom.

Notes

1. L. Lee Knefelkamp, "Faculty and Student Development in the 80's: Renewing the Community of Scholars," Current Issues in Higher Education, 2 (1980), pp. 17-18.
2. Ibid., p. 24
3. Ibid., p. 24.
4. Mike Rose, "Rigid Rules, Inflexible Plans and the Stifling of Language," College Composition and Communication, 31 (1980), pp. 389-401.
5. Maxine Hairston, "The Winds of Change: Thomas Kuhn and the Revolution in the Teaching of Writing," College Composition and Communication, 33 (1982), pp. 76-8.
6. Ibid., p. 78.
7. Ibid., p. 80.
8. Ibid., P. 85.
9. Sondra Perl, "Understanding Composing," College Composition and Communication, 31 (1980) pp. 367-368.
10. Anne J. Herrington, "Writing to Learn: Writing Across the Disciplines," College English, 43 (April 181), pp. 379-387; see also Toby Fulwiler and Art Young, Language Connections: Writing and Reading Across the Curriculum, National Council of Teachers of English, Urbana, Illinois, 1982, and C.H. Knoblauch and Lil Brannon, "Writing as Learning Through the Curriculum," College English, (September 1983), pp. 465-474.
11. For useful material on freewriting and brainstorming, see: Peter Elbow, Writing Without Teachers, New York: Oxford University Press, 1973; Linda Flower and John Hayes, "Problem-Solving Strategies and the Writing Process," College English, 39 (December, 1977), pp. 449-461.
12. Elaine Maimon discusses such strategies in "Talking to Strangers," College Composition and Communication, 30 (170), pp. 364-369.
13. Janet Emig, "Writing as a Mode of Learning," College Composition and Communication, 28 (May 1977), p. 122.
14. Elaine P, Maimon, "Visions and Revisions Across the Curriculum," ADE Bulletin. No. 69, Fall 1981, pp. 39-40.
15. Andrea A. Lunsford, "The Content of Basic Writers' Essays," College Composition and Communication, 3 (1980), p. 284; see also Marie Jean Lederman, "A Comparison of Student Projections: Magic and the Teaching of Writing," College English, 34 (1972), pp. 674-689, and William Irmscher, "Writing as a Way of Learning and Developing," College Composition and Communication, 30 (1979) pp. 240-244.
16. Lee Odell, "Piaget, Problem-Solving, and Freshman Composition," College Composition and Communication, 24 (1973), pp. 36-42. See also L. Lee Knefelkamp, Developmental Instruction: Fostering Personal Growth in College Students, Unpublished doctoral dissertation, University of Minnesota, 1974.
17. William G. Perry, Forms of Intellectual and Ethical Development in the College Years (New York: Holt, Rinehart and Winston, 1970).

USES OF COMPUTERS IN TEACHING

SATURDAY, 7 JULY

0900 - 1030

AN INNOVATIVE SYSTEM FOR ACADEMIC EVALUATION IN MATHEMATICS AT COLLEGE LEVEL

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SUMMARY

This paper describes a project started in 1975 at Instituto Tecnológico y de Estudios Superiores de Monterrey, created to solve many problems detected in traditional courses, such as, the variability in grading standards and in subject content found in different sections of a common course.

The project was started by creating a data bank of specific learning objectives including all posible themes from the high school curriculum up to the second year of mathematics in college, taken into account probability and statistics.

As the next step, a second bank of test items was designed to evaluate each objective from the data bank of specific learning objectives. Each test item includes different degrees of difficulty classified in a taxonomy from work.

For this purpose, all individual faculty members contributed by supplying test items which were selected, evaluated, standarized and added to the data bank by coordinators.

At the same time, the Computer Center developed a computerized system to support both data banks in terms of storing, test generating, test grading, record keeping and feedback of information.

The syllabus for a course was designed by selecting a subset of learning objectives from the bank, and individual exams were generated automatically for every partial test or the final from any set of given learning objectives determined by the professors teaching the course.

There are 4 partial tests and a final which are taken by the students outside the classroom, one every fourth week in a specially designed Evaluation Center. The students may take these exams only once at any time during the corresponding week. The process in monitored by a microcomputer, that files all data related to date, time of entrance, number of exam, course and section in which the student is enrolled.

Exams include only multiple choice items with 4 o 5 choices and are graded by an optical scanner inmediately after the student has finished. Proper feedback is given to the student as well as to the professor and the coordinators.

The sustem has a procedure which includes item analysis to determine which items are working properly and which must be changed or eliminated to maintain the bank. Another procedure is to keep statistics relatied to students, section, - - course, etc. and prepares reports for the professors and the department.

Up to December 1983 the data bank had in store 15,000 - test items for 1,200 specific learning objectives in mathematics, probability and statistics.

30,000 exams per semester are generated for 6,000 students within this system. 14 different courses with 140 sections and all the professors in the department are involved in the - - system.

There are some other departments such as Physics, Computer Science, Spanish, English, Business Administrtaion & Economics with similar banks of question, although the management for - each may not be th same.

This paper presents the implementation and some of the - results obtained with this program within the last 5 years.

THE WARM UP

In 1975, the faculty of the Department of Mathematics was not pleased by the system used in the administration of entrance - exams in mathematics and physics.
More than 1,000 exams had to be applied and graded in a period of two days which caused a lot of preassure on the working load of the professors and was also responsible, indirectly, for - - human errors and mistakes. Therefore, it was decided to start a bank of questions and to use the computer to design as many - - individual tests as needed; the grading procedure would become automatic with collateral effects such as a reduction in - - grading time, less errors in the grading procedure, and a - - counter measure that made cheating almost impossible. The number of questions stored in the bank at that point was 100 from which the computer made a random selection of 40 to design individual tests using a system developed by the Los Angeles - - School District in USA called CTSS.

The take-off was successful, and was followed by another bank of questions with 300 test items that was used in a math course with 12 sections. Problems arose from the fact that the questions did not correspond to the syllabys -as it was implemented in the classroom by the professors-, and that a larger dispersion in grades was found when analyzing reliability.

GENERATION OF SPECIFIC LEARNING OBJECTIVES

As part of the revision of the material in the courses, all possible topics taught in the area of math (from high school - to the second year of college) were defined in terms of specific learning objectives. With this information a data bank was thus created which would serve as a guiding reference in the elaboration of the syllabus of every course as well as for the design of questions for the evaluation of every objective.

A team of professors was assigned to this task and the - - result of their work was 1,200 specific learning objectives -- which were submmited to the rest of the faculty for further -- assessment and then stored in the computer.

THE TEST ITEMS GENERATION

The Department of Mathematics teaches subjects from remedial Algebra and Analytic Geometry to Differential Equations and - - Probability and Statistics in 24 different. These courses are divided in 3 main areas with a coordinator assigned to each -- one. His task is to collect questions from all the professors teaching the courses according to a program based on the bank of objectives.

Taking into consideration on one hand, a classification of the questions in terms of difficulty (using a taxonomy), and on the other, an assesment of the necessary time to solve each one, the coordinator then makes a selection, provides answers and - produces distractors for the questions within a multiple choice format. In the process being described here, the revised question were stored in the computer throughout a period of two -- years, at the end of which a bank of nearly 15,000 test items was produced.

THE SUPPORT SYSTEM

Parallel to the building of the two data banks, the Computer Center developed a system called S.A.E.A. (Spanish initials for Systems Aids to Evaluate Learning), whose functions were to -- manage a data base to store questions attached to objectives, generating and grading tests, keeping track and validating - - questions, generating statistics and printouts of all kinds -- for the feedback of professors, departments, etc. The project was partially funded by a grant from IBM and was also developed over a period of two years.

THE IMPLEMENTATION

The syllabus of every subject was clearly defined as a - - subset of specific learning objectives from the bank of objectives, which was printed and handed out to the students in the first class session, along with a calendar that described the objectives to be covered for every partial examination and the periods of time in which the test had to be taken.

There are 4 partial tests, one every fourth week and one at the end of the course. The students are allowed to take them on any day they choose during the week preassigned for presentation and at any time from 8:00 a.m. to 6:00 p.m. The exams are administered in a place specially designed for this purpose oficialy named as The Evaluation Center.

THE EVALUATION CENTER

This is a room with 400 seats with an adjoint room for -- administration, equiped with two microcomputers, an optical - scanner and a hard disc system. One microcomputer is used to key-in the number of the student from his I.D. card and the number of the individual exam for that student. It automatically validates the course and section in which he is enrolled and records the time and day of entrance. There are aproximately 6,000 students taking "personalized exams" from 140 sections - corresponding to 14 courses during a period of one week, only in mathematics. Other departments make of use the Evaluation Center for the same purposes an other preassigned dates.

Once the student has solved his test, his answers are - - read by the optical scanner and are graded automatically by the microcomputer, that keeps a record and gives him proper feedback.

At the end of the week printout for various purposes are produced for the professors as well as for the department.

RESULTS

The system has been working smoothly over the last 5 years, and the information obtained has been used to evaluate the -- program in mathematics as well as for the functioning of the Evaluation Center. Several changes in behaviour have been - - observed after of the system was implanted. Before, The students who used to select the professors that had high rates of passing with less work, now chose professors whose students - - performed best in the integrated evaluation system. Also, the professors, now shifted to a new roll, they became facilitators of the teacher-learning process.

Some other changes observed are listed as follows:

a) For the students:
   1. The number of lectures in this courses increased since there weren't any tests taken in the - - - classroom.
   2. The evaluation became the same for all students in a course.
   3. The student decided when to take the test.

b) For the professor:

1. The professor saved time in:
   - i) designing the test
   - ii) grading it.

2. The professor got inmediate feed-back information about the performance of every student in his section. He also recive statistics from his section that were contrasted with others.

3. The administration was done automatically by the computer.

4. The professor had more time to prepare his lectures and to asess his students.

c) For the Department.

1. The program was covered thorougly in each course, reducing variability and increasing the possibility of success of students in the next courses.

2. Courses, Textbooks, Programs, etc., were evaluated in the light of reliable information and corrective actions were taken if something was wrong.

THE COMPUTER'S PERSONA:
EVALUATING THE TEACHER IN THE BOX

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The computer has arrived in the classroom, a futuresque baby with its eternally blinking cursor, a green mechanized eye looking into our brains. In our excitement over its delivery and in our haste to begin using the computer to help teach, we have ignored some crucial issues. In particular, insofar as computers are doing some of the teaching, we must develop appropriate criteria by which to evaluate the teaching style of their programs, and these same criteria are also excellent measures of human teachers. The criteria for evaluating computer programs concern the behavior, capabilities and attitudes of the program, and the impact of the teaching on the students as learners. Aside from a passing comment here and there, and one notable exception,[1] this issue of evaluating programs' teaching styles has not been studied, and it is a crucial issue for the profession in the newborn computer age.

Probably the most exciting recent development in computing is the development of interactive, tutorial computer programs. Unlike the earlier drill and practice materials which required only that the user press a single key to provide an answer, these programs engage the user in a dialogue and discussion, with the computer facilitating and guiding the user's thinking. A number of these programs have been developed for the teaching of writing, and there will surely be more in other areas.[2] As these programs interact with the user, they take on a personality, and the user is inclined to imagine a real person inside the box, a "host in the machine",[3] a vision facilitated by compliments to the user, the use of "I" by the program and so on. This persona in the box is the teacher to a student using the machine for instructional purposes. Because our accumulating experience shows that the persona is a good teacher, the first questions to be answered are, what makes the computer a good teacher, and how do we know that it is?

One answer comes from observation of a good interactive tutorial program in action. The Seeing Eye Elephant Network (SEEN) program by Helen Schwartz at Oakland University is a model of this sort of program.[4] The program helps students develop their ideas about literary characterization in preparation for writing essays about what they have read. The program has students do two kinds of work. First, the students are tutored by the program, working individually. The program asks students to name a character they want to discuss and then to describe that character. Then the program asks for evidence supporting the description they've given and for evidence contradicting it. Subsequently, students have an opportunity to reconsider what they have said, and to cycle back through the program and change their ideas. In the second phase of the program, students can "publish" their ideas on a computer bulletin board, where other students can read and comment on them. At any point, the student can get a printed copy of the tutorial and other students' comments to take away from the computer and use as notes or an outline for an essay. Schwartz has designed the program for use on Apples, and has used it successfully in a large lecture course on Shakespeare. It allows each student to work on characterization individually, and facilitates discussion among members of the class in a way that is not really possible in the large lecture format. SEEN is an excellent example of an interactive tutorial program, and is a prototype of programs of this kind which seem to be enormously successful as teachers.

The success of programs like SEEN is obvious when one looks in at the door of a computer lab, and helps to explain why computers are good teachers. In a computer lab, the machines are sitting on tables, waiting to be used. If they are available (and more and more, they are less and less so), they are there, waiting around, in ways that teachers often are not, to do some teaching. They are always on line, always ready to go when the students appear. This availability is not something most teachers can provide to students due to the many demands on teachers' time. So the computer is a quiet, receptive teacher which is always ready to sit and listen to what students have to say. This receptivity and responsiveness is one characteristic of the computer as a good teacher.

A program can be written to suggest, moveover, that not only is the computer always at the ready, but also that it really cares what students have to say.[5] It can flatter the user ("Good work!"), encourage the user ("Can you add to that?"), and follow up on relevant points (as SEEN does by asking for evidence contrary to the student's position). In doing so, the persona facilitates learning by getting personally involved with students and their ideas. Students seem more willing to talk to one another about their ideas with a computer around to help, in Helen Schwartz's experience with the network portion of SEEN.[6] Thus, the computer excells because it is an interested, encouraging, caring teacher which gets involved with students and their ideas, and helps them get involved with one another.

Thus far, there are no impatient programs, bound by class time or course syllabi to cover a certain amount of material in a certain amount of time. A student can review, privately, as much and as often as necessary, try moving ahead without looking stupid, or practice as often as necessary to master a particular set of ideas or procedure. The computer does not care how many times students go over the same material or how many times they make the same mistakes. Both slower and faster students can profit from a computer helper. The computer has perfect patience, an important prerequisite for expert teaching.

The fact that the computer will go precisely as fast or as slow as the user wishes means it can provide "comprehensible input."[7] This phrase comes from the work of Stephen Krashen on second language acquisition, but can be applied to other kinds of learning. Comprehensible input is defined as material just beyond the present ability of the learner--a challenge, but not one so advanced that the learner cannot meet it. The computer can already easily diagnose a student's learning level, and with that information tell the student where to start on a particular program. Alternatively, a menu-driven program (where a number of options are displayed on the screen and the user is asked to choose one), with annotations, may tell the student what level each option is at and allow the student to choose the most suitable one. Thus, computers have the capacity to individualize and provide just the right material for each student in each learning session, a feat virtually impossible, as a practical matter, in conventional classrooms.

When the computer is engaged by students as an interactive tutor, it establishes three essential conditions for learning discussed by Frank Smith: demonstration, engagement and sensitivity.[8] Demonstration is a condition in which students learn by seeing and doing rather than in some vicarious way. Engagement means that students learn generally in an unconscious way, or at least without really noticing that they are learning. Sensitivity concerns students' expectations, and if learning is to take place students must expect it and expect to succeed. Interactive tutorial computer programs establish all three conditions in different ways. Computers can provide simulations, allowing students a hands-on demonstration of a principle they are studying. Using simulations, students can try a number of possibilities and learn by seeing what happens, in the case of both right and wrong answers. Thus a program with simulation can establish the condition of demonstrations which are necessary to learning.

Simulations and the interactive nature of programs provide a further illustration of how computers establish the three conditions of learning, because with any of the newer programs students must become active learners. It is not possible to use an interactive program without becoming actively involved by responding to the questions or problems the program provides. Nothing happens until users respond to the program and the more users respond, the more involved they come, and the more learning takes place. This active involvement contributes further to the three conditions of learning and notably to engagement. Moreover, students are deeply motivated and engrossed by the multisensory activity required. Some programs, using graphics and sound or voice synthesizers, involve the student by sight, sound and touch. New computers with touch sensitive screens will be even more engaging in these ways. Users are quickly engaged by a multisensory approach.[9] A similar claim has been made for the use of the LOGO programming language for children working with computers.[10]

Finally, students encounter the condition of sensitivity in computer programs insofar as tutorial programs provide feedback, have no single right answer and allow students to err and repeat at will. In SEEN, for instance, students are provided with several opportunities to review what they've said and change it, as well as receive feedback from the instructor and others in the network portion. It is not possible to fail with SEEN, or with most interactive programs. These conditions suggest that learning takes place when students are shown rather than told about something, when they are engrossed by it without full awareness, and when they believe they will be successful at it. Interactive tutorial programs establish the three conditions of learning because they give students infinite opportunities to do, to act without full consciousness, and to succeed, even if they fail in the course of their successes.

On a deeper level, the interactive tutorial programs have some subtle psychological advantages. One of these is that these programs work one-on-one with students, a format in which many human teachers are distinctly uncomfortable. The best teachers in my own experience were outstanding in a classroom or lecture hall, but became less and less effective as class size diminished. The lower the student-teacher ratio, the more individual variations, quirks and personality differences tend to appear and the more difficult it becomes to stay focused on the material at hand. Computer tutors have a consistent personality designed by the programmer, and if they are friendly and even-tempered without having "the cutes,"[11] can work very well with each individual student. It is simply true that it takes a certain personality to work well with students individually, and many good teachers lack that skill. Computers are fine tutorial teachers who can work closely with students on an individual level without anyone's feelings getting in the way.

Probably nothing hurts students' feelings more than the sense that the teacher is against them for any of a number of personal reasons. Computers are non-judgemental and non-biased. Despite the blinking eye of the cursor, the computer sees no color, creed, religion, mode of dress or hairstyle. It hears no slur, even against itself. What it sees are only the by-products of the brain and what it seeks to develop, altruistically and uniformly, is the increased capacity of the brain. Helen Schwartz's experience with SEEN suggests that students willingly take the computer seriously, and flourish as they do.[12] The computer, therefore, has psychological strengths that human teachers often lack: a capacity to work closely without worry about feelings and a perfect lack of prejudice of all kinds.

Needless to say, many programs do not measure up to these criteria. But as the production of good interactive tutorial programs continues, more programs which actually take on the role of the teacher will become available. We can be ready to evaluate these programs by looking both at their substantive presentation of the material and at the persona the program presents. The preceding discussion suggests ideal criteria for evaluation of the teacher in the box, perhaps with the following series of questions (some day, this might be an interactive program, too). As I raise these questions, note that I have phrased them in a way to make them apply broadly to the evaluation of both teachers in the box and outside it:

1)Are the programs/teachers quiet and receptive to students? Are they always ready to work and do they listen to and integrate what students say?

2)Do the programs/teachers talk with students? Do they use flattery, encouragement, and follow-up questions to draw students out?

3)Are the programs/teachers patient? Do they allow the student to cycle back and forth, stop out to get more help, or move on as soon as mastery is achieved?

4)Do the programs/teachers provide "comprehensible input"? Menu-driven programs offering different options at different levels can do so. Is it easy for students to get the right material each time?

5)Do the programs/teachers establish the three optimal conditions of learning through their presentation and format for responses? Do students have to do more than press the return key? Do the programs/teachers integrate and provide, in some tangible form, what students have done?

6)Do the programs/teachers provide useful, constructive feedback and will they do a simulation using values and information the student provides?

7)Will the programs/teachers be a friend without being cute or patronizing, and will they continue to behave predictably and without bias to all? Is the program sane and not neurotic? Does it fail to nag and pester?

Just as many computer programs, even the best interactive, tutorial ones, will not be able to meet these criteria, neither will some teachers, including some very good ones. However, these criteria can be seen as goals toward which computer programmers might work in designing interactive tutorial programs. As we evaluate programs in terms of their personas' responsiveness to students, their capacity to enhance learning, and their freedom from bias, we should use these criteria to appraise human teachers, too. As programmers set goals of creating expert teachers inside the box, human teachers should see these criteria as goals to work toward in their teaching, and as ideals for evaluating teaching. Doing so will enable us to turn the blinking eye of the computer into a winking eye as we share insights into the nature of good teaching inside and outside the box.

NOTES

[1] Stephen Marcus, "The Host in the Machine: Decorum in Computers Who Speak," Proceedings of the Western Educational Computing Conference, 17-18 Nov. 1983, San Francisco (N. Hollywood, Cal.: Western Periodicals Co., 1983), p. 173-176.

[2] For example, programs like Schwartz's SEEN and Marcus' Compupoem.

[3] Marcus.

[4] Helen J. Schwartz, Seeing Eye Elephant Network (SEEN). For information, contact Professor Schwartz c/o Department of English, Oakland University, Rochester, Michigan 48063, U.S.A.

[5] Raymond J. and Dawn Rodrigues, "CAI Invention Strategies," CCCC Convention, Detroit, Michigan, March, 1983.

[6] Helen J. Schwartz, personal communication.

[7] Stephen Krashen, Second Language Acquisition and Second Language Learning (Oxford: Pergamon Press, 1981).

[8] Frank Smith, Writing and the Writer (New York: Holt, 1982), pp. 170-176.

[9] Donald R. Grossnickle and Bruce A. Laird, "Microcomputers: Bitter Pills to Swallow--RX for Successful Implementation Efforts," THE Journal, 10 (May, 1983), 106-111.

[10] Seymour Papert, "Teaching Children Thinking," in The Computer in the School: Tutor, Tool, Tutee, ed. Robert P. Taylor (New York: Teachers College Press, 1980), pp. 161-176.

[11] Marcus, p. 174.

[12] Helen J. Schwartz, personal communication.

TECHNOLOGY CAN BRING US TOGETHER: THE IMAGINATIVE APPLICATIONS OF PERSONAL COMPUTING IN FOREIGN LANGUAGE EDUCATION

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The computer, heart of the Information Age, did not design itself, or create itself, or apportion itself. From mighty mainframe to powerful micro, it is and remains a uniquely human production. Why, then, is our response to it so paradoxical?

With the one hand, we applaud the promise of technology--the computer's merits which foreshadow a time fast-approaching when our society will be so integrally hooked into electronics at home, at school, and at the office that those of us unwilling to use computers could become the equivalent of people today who cannot read or write, namely functional illiterates. With the other hand, however, we exhibit free-floating fear of technology--a wide-spread perception of the computer as incomprehensibly omnipotent, omniscient and omnipresent--all of which leaves us with a disquieting sense of technology as inevitable, technology as threatening, technology as master not servant, and technology as sorcerer instead of apprentice. The fact that American education is tripping all over itself to computerize, and yet, ends up using the computer in ways which cause little if any improvement, betrays both the promise and the fear of technology.

Caught between fascination and fear, educators convey the impression that they long for innovative computer applications which will put an end to their worries about effective teaching and productive learning while, at the same time, they fear that the machines will take their power and replace them. Fear of replacement blinds many of us in education, and especially those of us in foreign and second language education, to the fact that the computer is an altogether new and revolutionary medium. As a result of such blindness, we tend to use the computer as yet another device to extend the traditional means and methods of education, thereby relegating it to dull textbook surrogate used to relieve teachers of the burdensome and boring drill-and-practice and question-answer learning tasks. Computer applications which amount to little more than workbook pages on cathode ray tubes (CRT) will do very little to usher in the dawn of effective teaching and productive learning with technology. What they could do is something we cannot afford: unimaginative computer applications could turn off an entire generation to technology (Waters, 1983).

Anything having to do with computers is a hot topic and achieves buzzword status among foreign and second language educators. All the sessions at the major language meetings with "computer" in the title are jammed. Yet, our approach to foreign language education remains traditional--the teacher, the book, the class...close the door and let us be (Janko, 1981)--and largely unresponsive to the rather non-traditional, cross-cultural communication problems confronting us--both inside and outside of the U.S.--in a world that long ago became McLuhan's "global village."

The cross-cultural communication problems inside the U.S. are due largely to the flood of immigrants and refugees teeming to our shores at a rate alarmingly surpassing a million foreigners a year. El Salvador alone has generated over half a million refugees since 1980. All in all, the United States accepts twice as many foreigners as all other countries combined. (U.S. News and World Report, 1982). For the most part, these refugees are uneducated, poor, and disenfranchised people whose attempts at assimilation into the way we live are severely and primarily hampered by their inability to speak English and our inability to speak their languages. That assimilation is essential no one decries or deplores. In fact, Senator Alan Simpson, Chairman of the Senate Subcommittee on Immigration, warns that if "...a substantial portion do not assimilate, they may create some of the same social and economic problems that exist in the countries from which they come." (Simpson, 1982). What is deplorable, however, is that we in language education--be it foreign or English As a Second Language (ESL)--have not enthusiastically and aggressively trained ourselves to understand the role of the computer in language acquisition, nor have we produced the software to fashion meaningful foreign and second language computer applications to help Americans become multi-lingual and foreigners English-speaking. Meanwhile, the tidal wave of immigrants sweeps relentlessly and alarmingly over America at an accelerating speed.

Nor are the cross-cultural communications problems *outside* the United States any less threatening. We no longer live in splendid isolation, independent and self-sufficient. Dependent on imports and exports, our relationship with other countries more and more determines our leadership status and our survival as the world's most advanced and affluent society. Nothing impinges on that relationship more emphatically than our ability to communicate with people in other nations. Yet, in spite of our unprecedented need for foreign and second language education, foreign language education is not only *not* a top priority in this country, but it is also in trouble.

Foreign language education in this country is in trouble for many reasons, but the major reason is that we who are in it do not explore every possibility that might help us do our job more efficiently. There are marvelous opportunities for imaginative computer applications that would improve and facilitate the learner's progress as he or she learns the target language (TL)--opportunities that make both learner and computer the most effective problem-solving tool yet created by the mind of man. If we in foreign and second language education want to do a better job, we must address ourselves to the two capabilities which make the computer--in computer-based, interactive videodisc applications--a totally "new" medium, namely simulation and gaming.

Simulation

This year marks the 36th anniversary of the transistor, forerunner of the microchip and herald of the new computer age (Davis, 1983). It is also the 57th anniversary of the videodisc player, which was invented in 1927 by the English inventor, John Baird (Sigel, 1980). The videodisc player as we know it, however, did not appear until 1975, when it became commercially available as Telefunken/Decca in Germany (Kearsly, 1981).

During the 1970s, sporadic experimentation with the marriage of computer and video--interactive video--proved instrumental in igniting dreams and visions of its potential usefulness in education and training. Today, although full utilization of computer-controlled videodiscs in education is possible, it is not yet a convincing reality. In foreign and second language education where it could be extremely effective in helping learners learn languages, it is barely being used at all.

Why should simulation be used in foreign and second language acquisition, and how can it be used?

Simulation should be used in language education because it is the next best thing to being there, and it incorporates what we know about how people learn. For years researchers and learning theoreticians have pointed out that real world experience is the only effective way to learn a foreign language. In the psychophysiological literature, we encounter the learning concept that the level of a learner's alertness--necessary for all kinds of learning--depends to a significant extent upon the quantity and variety of sensory inputs. Research also suggests that complex intellectual development--the kind that enables a learner to "think" in the TL--occurs as the result of having to integrate new evidence and materials into new mental patterns. Marshal McLuhan (McLuhan, 1967) contends that our "tribal culture" resulting from the electronic revolution is more responsive to symbolic (visual) than to logical communication.

If these learning theories have validity, then simulation is an effective pedagogical strategy in the learning of languages. Since most learners cannot physically experience other cultures in space and time, simulation of real world experience is an effective solution. By interacting with the visual and audio components of the computer-controlled videodisc simulation, the learner experiences alertness--due to the variety and quantity of auditory and visual inputs--as well as improved intellectual integration of the foreign culture and its language through the highly symbolic (visual) communication.

If simulation of reality is an environment for the learning and languages, how can it be used effectively?

Using Simulation

An imaginative and effective application of interactive simulation takes the learner on a simulated visit to the TL country, exposes him to the TL communication situations with many variations and numerous native speakers, and allows the learner to experience how different response options affect the outcome of a communication encounter in a foreign country. The videodisc consists of different TL Communication Sequences (TLCS)--airport, restaurant, hotel, etc.--which are farther broken down into scenarios and encounters, each encounter having at least four response options. Each sequence can be experienced in three modes. In the Preliminary Mode (PM), the learner, for example, finds him or herself wandering into a restaurant. As he or she does, he or she encounters a native speaker and must communicate what is wanted by selecting from a variety of possible cues or response options. The response option having been selected, the videodisc freeze frames, and the computer pauses to allow the learner to record his or her response in the TL by speaking into a microphone provided at the computer terminal. Throughout the sequence, the learner is not permitted to continue until each response has been recorded. Once the PM has been completed, the learner's performance is constructively and visually critiqued.

In the Guided Mode (GM), the learner receives feedback, clues, and advice as he or she selects each response option. At any point in the sequence, the learner can elect to hear native speakers model correct pronunciation for him. In the Seminar Mode (SM), the learner is presented with a number of model communication encounters, complete with explanations, discussions, and clarifications. The learner is then asked to produce a communication encounter of his or her own.

Because we have learned a lot about the design, development, and use of interactive videodisc (Floyd, 1980; Kribs, 1980), we can avoid repeating the "old wine in new bottles" mistake of earlier applications--applications in which we programmed the "new" medium with old content. It is, after all, a brand new medium; we must see it with new vision.

Although it is clear that the videodisc is a powerful technology for simulation, in the past, it has not been widely used in foreign and second language education as an instructional strategy. What numerous language educators have turned to more readily than videodisc is gaming. The chief reason many instructors give for using video games in class is the motivation games are thought to provide. Even though there is ample room to question the wisdom of having motivation as the sole reason for producing video games, using them, and expecting them to carry the content of our courses, their use is understandable. Although computers are purchased with the noblest of intentions, the plain truth is, they are used to play games (Barnstetter, 1983). And, although there is nothing wrong with game playing, when used for instruction, gaming must also be pedagogically sound.

There is no reason why games in foreign and second language education cannot be both pedagogically sound _and_ entertaining. Because we now have technological capabilities we have never had before, we need new vision and new models of instructional design. Gaming as an instructional strategy is an excellent tool, provided we know what it is we want to accomplish pedagogically.

Gaming

Video games provide a so-called "safe," non-threatening introduction to the world of personal computing, and thereby open the doors to the more "serious" computer applications. What makes games worth playing in the first place, however, is the real human competition and interaction. Even the most complicated arcade games become boring and tiresome; yet, even the simplest of games with human "interaction" has an intrinsic excitement about it. Interactivity is truly the key element in effective computer games. It combines the novelty and motivation of computer play with the interaction of people who are *intellectually and emotionally* (both brain hemispheres) involved.

If we in foreign and second language education want to seriously consider the benefits of gaming in learning languages, we must opt for a time-sharing, three-tiered computer system with mainframes on top, minicomputers in the middle, and microcomputers on the bottom. Such a system would permit the desk-top micros to have access to sophisticated programs run on the larger machines only. In addition, a time-sharing computer service would eventually permit linking "players" throughout the U.S., Europe, and Canada.

Imaginative applications of interactive gaming in foreign and second language education--which learners could access via terminals--should consist of at least four types: simple textual games which are designed to introduce learners to gaming and the TL cutlure; screen-oriented games that use cursor positioning such as video game versions of Scrabble, Concentration, and Name That Tune--designed to practice TL vocabularies; page-oriented electronic dictionary games where learners view a page from a TL dictionary and use as many words as possible to compose a short story, skit, or speech in the TL--designed to discover creative applications of writings skills; and multi-player, multi-terminal games with complex rules, fantasy TL characters, and plots built around TL recall, comprehension quickness, and the ability to "think" in the TL.

The simple fact of the matter is that there are no *technical* obstacles which now exist that would gravely impede the successful, full-scale introduction of personal computing, simulation, and gaming into the foreign and second language curriculums. Data can be accessed by telephone, and once accessed, shared. Password protection can be applied to prevent unwelcome intrusions. Power shortages can be handled through surge suppressors and generators which are keyed to take over when power drops below pre-set levels (Baxter, 1983). Software exists and can be developed which makes it difficult to imagine a simulation or game too big or too small to be constructed in a pedagogically sound and entertaining manner. The hardware is in place; all that is needed is the "human" software to make it work.

In the federal report on the quality of education in the U.S.--A NATION AT RISK--are the following words: "If an unfriendly foreign power had attempted to impose on America the mediocre educational performance that exists today, we might have viewed it as an act of war." (NCEE, 1983). From a certain perspective, this is the most hopeful statement in the entire report. The simple truth is that an unfriendly power did *not* impose mediocre educational performance on America; we imposed it on ourselves by simply allowing it to happen. If we imposed it, we can dispose it. We can, indeed, view mediocre education as an act of war and enthusiastically and aggressively oppose and fight it. Through personal computing, technology can bring us all together: teachers, students, learners, citizens of this country and the world. Through the fantastic learning experiences of simulation and gaming, we can improve learning and promote better understanding among us all. Although we can all march to the beat of the electronic drummer, the desire for excellence in education, the desire for understanding, and the desire to communicate are not in the technology or the hardware. If such desires exist at all, they exist in each and every one of us.

BIBLIOGRAPHY

Barnstetter, D. The Thinking Man's Game. Today Magazine, 1983, 2(6), 6.

Baxter, E. It's Your Decision. Personal Computing, 193, 7(8), 87-93.

Davis, M. The Chip at 35. Personal Computing, 1983, 7(7), 127.

Delano, S. Turning Sales Inside Out. Inc. Magazine, 1983, 5(8), 99-100.

Dykes, J. Poetry in the New School. Teacher and Technology Supplement, 1970, 1(1), 11.

Euchner, C. Students Spend Little Time on Computers. Education Week, 1983, 2(39), 8.

Floyd, S. Designing Interactive Video Programs. Training and Development Journal, 1980, p. 73.

Janko, E. Education Fads That Have Come and Gone. New York Times, 1981, p. 23, col. 8.

Heines, J. et al. Tomorrow's Classrooms--The Changing Focus in Computer Education. T.H.E. Journal, 1983, 10(5), 100-4, 108.

"How Computers Create Paying Jobs at Home," Consumers Digest, 1983, 22(4), 6.

Kearsly, G. Videodiscs in Education and Training: The Idea Becomes Reality. Videodisc-Videotex, 1981, 1(4), 208.

Kribs, D. Authoring Techniques for Interactive Video. Journal of Educational Technology Systems, 1981, p. 181.

Lipsitz, L. Will Computers Ever Replace Teachers? Educational Technology, 1983, 23(7), 6.

McLuhan, M. The Medium is the Message. New York: Bantam, 1967.

National Commission on Excellence in Education. "A Nation at Risk." Washington, D.C.: GPO, 1983.

Putnam, C. Foreign Language Technology: The State of the Art. Calico Journal, 1983, 1(1), 39-40.

Rubin, C. Some People Should be Afraid of Computers. Personal Computing, 1983, 7(8), 55-57, 163.

Sigel, E. et al. Videodisc. New York: Knowledge Industry Publication, 1980.

Simpson, A. Problems of Immigration. USNWR, April 12, 1983, pp. 47-50.

Snyder, T. Just How Clever Is 'Solid-state Socrates?' Education Week, 1983, 2(39), 19.

U.S. News and World Report, April 12, 1982, pp. 47-50.

Waters, C. An Apple a Day. Inc. Magazine, 1983, 5(8), 51-54.

THE USE OF MICROCOMPUTERS IN INTRODUCTORY SCIENCE LABORATORIES

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1. INTRODUCTION

The use of computers in science teaching laboratories is becoming more common. Increasingly teachers at all levels are discovering that a computer is a very versatile tool that opens up areas of laboratory work unthought of a few years ago.

Computer use in laboratories can be placed in two broad divisions corresponding to their employment as data gatherers and in computer assisted instruction.

2. PRE-LABS AND POST-LABS

Often, instructors of introductory science laboratories find it necessary to spend the first half hour of a laboratory session describing in detail how the experiment is to be run. I, and many of my colleagues, have found this to be tedious, and personal observation leads me to believe that the students find it so as well. The computer in the laboratory offers a way to avoid this tedium by the use of so called 'pre-labs'.

A pre-lab is a computer assisted learning module that explains in detail how the experiment is to be performed. For example, at EIU (Eastern Illinois University) we used a pre-lab for the acceleration of gravity experiment[1] in the freshman Physics laboratory. The students read about the experiment in the lab manual and then come over to our Atari microcomputer to run through the pre-lab. The pre-lab can go over the theory of the experiment with them if they wish or it can go straight to the data gathering section. Here the program shows how the data table might be set up and what measurements were to be made. At this point the pre-lab shows its advantage over a manual because it can simulate an actual experiment as a cartoon sequence. In the case of the gravity experiment it shows pictures of the weight falling, of the data tape gathered, and how points from the data tape may be transferred to the data table.

At EIU we found the pre-lab concept to be popular with the students, some of them returning to the computer numerous times during the experiment to make sure that they were doing it correctly.

Another purely software use for the computer is at the end of the experiment; the so-called post-lab.

One of the most time consuming activities associated with grading freshman laboratory notebooks is searching for algebraic errors in their calculations. The post-lab offers an escape from this activity. One of the freshman physics experiments at EIU is a ballistic trajectory experiment[2]. Students determine the points on a trajectory experimentally and compare the resulting path with that predicted by the application of Newton's laws. By entering their data into the computer, which plots both the experimental and theoretical trajectories, the students are able to see what their results should look like. If the theory is dramatically at varience with their results the students can immediately recheck their data for errors which in this experiment were usually in distance measurements. Without this post lab students who forgot that they had laid the metre rule down twice to make a distance measurement and were thus off a metre in all their measurements would blame the resulting discrepancy between theory and observation on 'human error'.

Pre and Post labs have a number of advantages and one major disadvantage. The advantages are in the saving of instructor time and in making it easier for the student to perform the experiment. The disadvantage is that these programs are sometimes so complete that the student has no need to think for himself, performing the experiment becomes the following of a recipe. This disadvantage can be lessened, as we did at EIU, by requiring the student to produce a complete laboratory report. The computer was not set up with a printer so that the post labs were advisory and their results not easily copied.

3. MICROCOMPUTERS AS DATA GATHERERS

The other great use of microcomputers in the laboratory is in the area of data gathering and computer control although computer control is not widespread as yet in the introductory laboratories.

The introduction of cheap home computers equipped with digital and analog input/output ports has opened up the introductory science laboratories to computer data gathering. The computers were not of course equipped with these ports with an eye to their laboratory use, rather the ports were thought of as 'game ports' to facilitate the playing of video games. Prior to the introduction of these computers science courses had used 'board' computers such as the 'KIM'[3]. Unfortunately, before an experiment could be performed the student had to be taught machine language, a time consuming business. More time would be consumed by the writing of the data gathering programs in machine language with the attendant difficult debugging. In the end only one or two experiments might be performed during the entire course. With a game port equipped home computer the student has direct access to any transducer connected to the game ports by means of the Basic language. It is now really possible to use the microcomputer as a tool in the introductory laboratory.

It is simple to interface a crude but effective photogate to a game port equipped computer such as the Atari 800[4], the VIC20 or the TI99/4A[5]. With the aid of a software clock the time that the photogate is blocked may be measured. Timers of this type are common in dynamics laboratories and have many uses; the computer, though, has a great advantage over traditional timers in that it can take time intervals repeatedly and rapidly and store their values in memory. For instance, the decay of the speed of a pendulum bob with number of swings may be measured or the decay of the speed of an air cart on an air track. These measurements would be difficult using traditional methods because the experimenter cannot manually record the data fast enough.

The game ports of many computers were designed to measure changes in resistance of a 'paddle' in order to play such early video games as 'PONG'. With this capability variations in light intensity may be detected through the use of a simple photocell. Any light meter can tell you how light intensity varies but the computer can marry light intensity with time and temperature mesurements, again through the game ports. For example a student can investigate the manner in which parts of a solar detector vary with temperature through the day as the intensity of sunlight falling on the detector changes. This regular measurement and storage of parameters over a long period is something that is more conveniant and reliable to do using a computer. A home computer is cheap enough to be dedicated to the one use for a long time.

Unlike much other laboratory equipment the computer may be programmed to act as if it were some one or other particular piece of laboratory equipment. A good example of this is the proliferation of programs that turn the computer into a photon counter[6,7]. This particular application is rather advanced for the introductory lab. Another example is the color-detector that one of the freshman undergraduates here at Rose Hulman is developing. This detector uses four photocells interfaced to the Atari 800 through the game ports. Each photocell is painted a different color. The computer recognizes the color of light shone onto the detector from the intensity relationships between the photocells.

The computer offers a way of enriching the introductory science laboratory; experiments can now be done that could not be done before. Statistical analysis of data is possible giving students a clearer understanding of the meaning of 'experimental uncertainty', and students get an early introduction to the kind of laboratory they would find in modern hospitals and research institutes.

As always, with advantages come disadvantages. In this case with the use of the computer as a data gathering tool the student tends to become isolated from the science being observed. The science laboratory becomes a place where you push buttons in strict sequence and not a place where you discover how the world around you behaves. One method of mitigating this disadvantage is to force the student into close interaction with the logic of the experiments. We have developed and tested a pilot course of this type, 'Computer assisted experiments in introductory linear dynamics'[8].

This course uses the Atari 800 microcomputer with sensors connected through the game ports. The only software provided, apart of course from the resident Atari Basic, is a timer routine. The students write their own programs to gather the data and manipulate it. The course guides them so that each successive program is built of simpler programs that precede it. With this approach we hope that the student will more readily connect the theoretical equations of motion with what is actually observed.

The Atari 800 has good graphic capabilities but we do not encourage the students uo use them because of the large amount of programming time required. Students are required to write up the experiments as usual as this experience of report writing is valuable.

4. CONCLUSION

Computers have much to offer the introductory science laboratory both in the software areas of pre and post labs and in the area of data gathering. We have found the major impact of computers to be in 'extending' experiments. Students learn to interact logically with the computer and are able to perform experiments that could not be done otherwise.

REFERENCES

1. D.Davis, 'Free Fall', available from D.Davis, Physics Department, Eastern Illinois University, Charleston, Illinois 61920.

2. D.Davis, 'Physics Examples I', published by Conduit, Iowa City, Iowa.

3. Rafert B., Nicklin R.C., American Journal of Physics, 1982, 50(2), p. 108.

4. McInerney M., Williams K., Jounal of Computers in Math and Science Teaching, Spring 1983, II(3), p. 21.

5. Thomas F.J., Journal of Computers in Math and Science Teaching, Fall 1982, III(1), p.25.

6. Munger, Burton L., Zammit K.E., American Journal of Physics, 1980, 48(8), p. 623.

7. Miller S.R., Peterson M.A., American Journal of Physics, 1982, 50(12), p. 1129.

8. McInerney M., to be published in the Journal of Computers in Math and Science Teaching.

REPORT ON A COMPUTERIZED AND STUDENT-CENTERED CLASS

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The lecture is the most widely used medium of instruction in higher education and it is the most highly criticized. While its roots go back to Socrates and Plato, oral lecturing was popularized in the medieval universities. Prior to the invention of movable type, the lecturer read to students from the few books that were available. In fact, the term lecture is derived from the latin word legere which means "to read" (Hoover, 1980).

The oral lecture has survived in universities in part because of an inertial effect and in part because it has certain advantages: it is economical, it takes less time to prepare than other media, it can be current in content and geared for a particular audience, and it can draw attention to important points (Kozma, Belle, & Williams, 1978).

On the other hand, there are also disadvantages with lecturing: it does not allow students an active and direct involvement with the information being presented; it is a one-way communication that may encourage intellectual passivity; it does not encourage creativity and problem-solving; and the student retention rate is poor (Kozma et al., 1978). Furthermore, an underlying assumption is that all students can take notes and comprehend the same material at the same rate (Henderson, 1969). And finally, since "the essence of good lecturing depends on the speaking ability of the lecturer (Editors of Change, 1978, p.8)," it assumes that the presenter possesses a stimulating personality, a voice with bright tone and variation, a repertoire of good gestures and jokes, and an ability to perform a show (Henderson, 1969).

Because most lecturers are not skilled performers, a common problem is that students become bored. Cameron (1979) found that only 12% of all students actively listen to a lecture. Even the most stimulating lecturer will not inspire all students because they are all different. Furthermore, there is no clear evidence that students learn more from instructors who receive high ratings. Overall, students have such individualized styles of learning that no one method or medium of instruction has been found to be superior to others (Kozma et al., 1978). Most of the research that has measured student achievement as an index of the relative effectiveness of lecturing is inconclusive. While students tend to prefer discussion methods over lectures, some studies suggest that discussion is superior only when focusing on higher-level cognitive skills (Ellner and Barnes, 1983).

The Class Organization and Structure

This report is on an introductory level human sexuality class that is offered each semester, has an average enrollment of 100 students, and is scheduled to meet an hour and 20 minutes for 2 days a week. The class meets *en masse* on Tuesdays and on some Thursdays. For most Thursdays, however, the class is divided into small discussion groups which meet at various places across campus. It is important to note that this class format evolved over time rather than being suddenly implemented.

Hard-Copy Lecturing

Nearly 90% of all the lecturing information is presented to students in printed form. These lectures are prepared on the author's word processor in a condensed and abbreviated style, reproduced and distributed to students at the beginning of each lecture meeting. The students are told that it is not necessary to take lecture notes, since the lecture handouts contain sufficient material for the exams. Instead, they are encouraged to listen to the instructor, who then presents a lecturette. This incorporates what Hoover (1980) describes as a brief emphasis on explaining, telling, and showing to enhance critical thinking. The remaining class period is used for questions and answers, other media presentations, and guest lecturers.

The Discussion Groups

Discussion of value-laden issues is considered to be the most effective method known for processing affective learning. Because most of the topics in human sexuality are permeated with pluralistic values, student discussion is very important. Given the difficulty of conducting meaningful discussion in a large class, the students are divided by random selection into small groups. Attendance and some participation is required in order to earn a respectable grade.

The discussion groups are facilitated by other students who are selected according to the following guidelines: 1) they must be upper-division students who have had an appropriate background of course work; 2) they must have earned average or above average grades and have a written letter of recommendation from their former facilitator; 3) they must exhibit a strong interest in facilitating and pursuing a career in this area. The latter is generally determined via an interview with the instructor and an assessment of their relevant work experience. Many student facilitators, for example, have had some training in peer counseling and have done some volunteer work with various human service groups in the community and on campus. Overall, there appears to be a natural selection process operating in that only those who feel competent and interested apply for facilitation.

Although most of the facilitators already possess a great deal of natural talent, and have had related training, they are given a sequence of exercises and readings that parallel the outline of the sexuality class. They are required to read A Manual for Facilitators, and Values in Sexuality (see references).

The facilitators are required to prepare a monthly report of their group's progress, as well as maintain records on attendance and participation. They are granted a 3-credit grade for their work which is based, in part, upon the group members' evaluation of their effectiveness as a facilitator.

Evaluation Procedure

Near the end of each semester the students are given an anonymous survey which includes both forced-choice and open-ended questions on their evaluation of the class. They are also given a survey to evaluate their facilitator and their group. In both cases, clear instructions regarding anonymity safeguards are provided in advance.

The students' learning is evaluated via five objective exams, which are generated from a computerized file of test items. These exams are machine graded and the results are stored on a computer for preparing final grades.

The facilitators are required to prepare an overall written evaluation of the entire instructional system. They also provide ongoing feedback on the other students' reactions to various features of the class.

Results and Discussion

Data has been collected on 340 students thus far, and their responses have been quite enthusiastic. When asked, on a forced-choice question, to what extent they agreed or disagreed with the procedure of providing hard-copy lecture notes, 46% chose "strongly agree," 34% "agreed," 9% were "neutral," 8% "disagreed," and 3% "strongly disagreed." Similarly, when asked if they thought this practice should be continued, 45% "strongly agreed," 45% "agreed," 5% were "neutral," 3% "disagreed," and 2% "strongly disagreed."

The students were also asked to provide reasons why they answered as they did. The following is a sample of comments from those who expressed agreement with this procedure:

> /It is much easier to listen to a lecture and learn instead of trying to write notes/ More factual data, more organization/ I can read faster than a teacher can talk/ When writing down notes, I am not really listening to what is being said and putting it in my mind in a logical order/ Relieves note taking/ I get tired of taking notes/ No one likes to sit for an hour & a half & take notes/ I hate taking notes/ I think the lecture notes are a great idea; I wish other instructors would do this/

For those who disagreed with the use of printed lecture notes, here is a sampling of their reasons:

> /They were interesting, but a lot of info was packed into them/ Why listen in class or come to class if the information is handed out/ I feel that giving handouts is an easy way out of giving lectures/ Personally, I get more out of an oral lecture than a handout/

Another evaluative index of the class is obtained from the pattern of responses to the item, "Please list, in order of importance, 3 of the best features of this course." Forty-two % of the students listed the discussion groups as #1 and 6% listed lectures as #1. For the second best feature, 17% listed discussion groups and 9% listed lectures. Other common responses were, "learning about myself," or "obtaining accurate information about sex." The remaining answers were too idiosyncratic to be fitted into a meaningful category.

As might be expected, the students also rated their facilitator's performance quite highly. In response to the forced-choice question, "How would you rate your facilitator's handling of your group," 47% chose "superior," 51% "above average," 2% "average;" none selected "below average" or "poor." Although these percentages are derived from just one semester (92 Ss), they do reflect the pattern of previous evaluations.

While there was no attempt to measure change in student learning, there has been a noticeable increase in the percentage of correct responses on the exams, over the past few semesters. None of the exams were used more than once; however, the test items were derived from the same file.

Discussions and Conclusions

Much of the popular literature suggests that the most common educational use of computers has been computer aided instruction (CAI) and simulation games. While personal computers have been used primarily for data storage and word-processing, the author believes that these features are also applicable to improving instruction (especially lecturing) in higher education. The recent emphasis on increasing student teacher ratios and simultaneously improving teaching effectiveness has provided an impetus to develop an alternative instructional system.

Using the word-processor to prepare hard-copy lecture notes has many advantages over the traditional oral lecture. 1) More information can be "packaged" into a printed lecture and students are spared the burden of taking notes. 2) Students can learn more by active listening and engage in more critical thinking. 3) The printed notes are more accurate, more legible, and better organized than hand-written notes. 4) It is easy to retrieve previous lecture notes, and update the data. 5) This procedure pressures the instructor to better prepare and organize lecture material since he/she is not likely to want to dispense an incoherent set of notes. 6) Student satisfaction is greatly enhanced.

The only perceived potential disadvantage of this system is that some students may decide to cut classes and have a friend pick up a set of notes. However, since students are tested on the other media presentations, this has not been a problem.

Using the computer to generate exams also has many immediate advantages: an exam can be prepared and printed in about five minutes; the printed copy is neater and free of typing errors; two or more forms of an exam can easily be prepared to thwart cheating behavior; randomized item selection can be used to prepare more equivalent forms of an exam; and finally, clerical aids are relieved of typing and can be used for other purposes.

The instructor has discovered that using the computer to prepare final grades also has some advantages: there are fewer errors of calculation; the process is less time-consuming; students tend to be impressed by the neatness and accuracy of a computer printed distribution, and are hence less likely to dispute a grade.

They also tend to perceive that grades are granted more objectively and fairly.

There are also several advantages associated with utilizing discussion groups in the manner presented in this report. 1) They help to complement and balance the large lecture sessions. 2) They help students to formulate more clearly defined value systems. 3) It is less threatening for students to discuss personal sexual issues with their peers; an instructor's presence tends to cast a chill on such discussion. 4) Facilitators are provided an experience which frequently helps them decide whether or not they want to pursue a career in the helping professions.

While oral lecturing undoubtedly has its place in higher education, it is the author's belief that to transmit most basic information via this process is as archaic as the medieval university. The technology of computers and high-speed duplicating machines provide a means of greatly improving instructional efficiency. This procedure also results in more available time for student-centered activities. Furthermore, once it is set up, the computerization of class-related tasks provides more time for the instructor to engage in other activities.

Overall, the instructional system discussed in this paper seems to offer the best of both worlds: a more streamlined and efficient production of student credit hours and a more satisfying and humanized classroom. Both the administration and the students seem to be more content.

REFERENCES

Auvine, B., & Densmore, B., & Extrom, M., & Poole, S., & Shanklin, M. (1978). A manual for group facilitators. Madison, Wisconsin: Wisconsin Clearinghouse.

Dolan, C. (1982, October 20). At some colleges, students profit by sparing others from scribbling. The Wall Street Journal, p. 29.

Ellner, C., & Barnes, C. (1983). Studies of college teaching. Lexington, Massachusetts: D.C. Heath and Company.

Editors of Change. (1978). Guide to effective teaching. New Rochell, New York: Change Magazine Press.

Henderson, N. K. (1969). University teaching. Hong Kong University Press.

Hoover, K. H. (1980). College teaching today: A handbook for postsecondary instruction. Allyn & Bacon, Inc.

Kozma, R., Belle, L., & Williams, G. (1978). Instructional Techniques in Higher Education. Englewood Cliffs, New Jersey: Educational Technology Publications.

McKeachie, W. J. (1978). Teaching Tips: A guide for the beginning college teacher. Lexington, Massachusetts: D.C. Heath and Company.

Morrison, E. & Price, M. (1974). Values in sexuality. New York: Hart Publishing Company.

Morrison, E. (1977). Teaching human sexuality: The use of discussion groups and teaching aids in a college course. In R. Smith (Editor), Resources for Teaching about Family Life Education. Minneapolis, Minnesota: NCFR.

EXPERIENTIAL APPROACHES TO TEACHING

SATURDAY, 7 JULY

0900 - 1030

THE USE OF A SELF-SUPERVISED ACTIVITY TO ACQUAINT COLLEGE STUDENTS WITH THE TEACHER-STUDENT DYNAMIC

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Students in the courses offered by the Animal Sciences Department at the University of Maryland tend to be underachieving, yet because frequently they already possess extensive background experience in animal agriculture, they are often quite vocal and unabashed in their criticisms of teaching methods and approaches. Fault is most often found with the level of challenge presented to the students, the types of feedback their teachers seem willing to accept and the responsiveness of instructors to student complaints.

Most undergraduate students in this program appear to interpret "challenge" as exposure to material or techniques outside their previous experience. Once the "newness" passes, little challenge is perceived, even though the level of proficiency attained may be quite low. "Teaching" is thus perceived by many agriculture students as the presentation of information and the demonstration of its utility, while "learning" stops when exposure becomes comfortable or routine (the equivalence of "I've heard that before" and "I know that").

Feedback is obtained in Animal Sciences courses largely via the attempted objectivity of written examinations. Such exercises are often criticized by students as focusing on the unimportant, trivial or obscure. Likewise, any effective reinforcement ("learning from one's mistakes") is precluded by the emphasis on new course material through the semester and by the current trend away from cumulative examinations.

After several years of experiencing these sorts of criticisms the faculty of the Department's most popular program, the equine science option, became interested in the identification of a means for both increasing student awareness and appreciation for what teaching is all about and for restoring a positive balance in the teacher-student relationship. Formal role reversals easily become unreflective role-playing and therefore are limited in effectiveness. However, "role identification" can be quite effective in transcending the students' perceptions of themselves. On this basis, an attempt was made to develop a loosely-structured activity intended to subtly introduce the students to the experience of teaching while they remained in a "student mode".

The activity capitalized on the fondness of most agriculture students for baby horses. A dozen totally untrained baby horses were brought onto campus and were housed in two barns. Some sixty previously inexperienced students participated in "handling and training" classes which were organized in a loosely-supervised manner, relying heavily on self-supervision. After watching detailed demonstrations and videotapes describing the skills they would be asked to teach the horses, the students were assigned among the horses and were instructed to begin. During the one-hour classes, additional experienced undergraduate students made themselves available to answer questions or to re-demonstrate specific skills, but they did not directly teach or offer criticisms or suggestions. At no time was a professor or individual identifiable as a "teacher" involved for the three months of the classes. For safety reasons, the progress of the classes were monitored through weekly meetings with the experienced students, and the progress of the horses by weekly tests of their abilities which were administered by the faculty.

At the end of the semester the students were asked to respond to a long questionnaire. Most of the 35 questions concerned whether the classes were fun, which was their favorite horse, what time of day did they prefer to attend the classes, etc. Interspersed among them were the 8 questions listed in Table 1, all of which concerned perceptions of teacher and student roles and of the interplay between them.

TABLE 1

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1. Were you ever able to relate what was happening with the horses to your own learning processes or responses to teachers? How?
2. What was the most important thing this activity taught you about yourself as a teacher?
3. Do the same teaching methods work with you as worked with the horses?
4. Did the performance of the horses under your teaching accurately reflect your teaching effectiveness?
5. Does your classroom or examination performance accurately reflect your teachers' effectiveness?
6. What is your major criticism of your teachers?
7. Did you notice any change between September and December in your ability to identify with any of your teachers?
8. As a result of your participation in this activity, are you a better learner?

Several of these questions addressed the students' abilities to identify with a teacher's role, and to develop some insight into the problems teachers experience as individuals attempting to impart scientific knowledge or skills to younger, less experienced individuals. Of the 60 students, 85% saw a teacher's approach to a student reflected in the student's responses to the instruction (Question 1). The most common observations specifically noted were that effective learning required a teaching approach that emphasized patience and, to a slightly lesser degree, repetition. "Patience" in a teacher was also stressed in responses to Question 2. At the same time, 38% remarked that teachers may at times be justified in becoming frustrated with inattentive pupils.

Interestingly, 84% of the students thought that the same teaching methods were effective when directed toward them as when employed by them (Question 3). Most admitted that their teaching methods were mainly imitations of their own teachers' methods. In addition, all of the students thought that their own teaching effectiveness was clearly reflected in the horses' learning rates (Question 4), contrary to the claim 25% made in dissociating their performance from their teachers' effectiveness (Question 5). The most common complaints about the teachers of their other courses were that they were either too repetitive ("boring") or impatient ("too fast") (Question 6), in contradiction of their admitted reliance on repetition in their own teaching efforts. The responses to this questionnaire seem to reveal a certain amount of confusion among students as to the true nature of the teacher-student dynamic, despite their many years of experience in this relationship.

It appears that when trying to teach, the students in this "experiment" fully understood and embraced the function of a teacher as an "entrepreneur" of knowledge and skills, but when perceiving themselves in the "learner" mode (in their other courses), they demanded control (or at least influence). Still, two-thirds of the students claimed that because of this activity their abilities to identify with the efforts of their own teachers were increased (Question 7), and 50% considered themselves to have benefitted by applying this experience "in reverse" and becoming better learners (Question 8).

The notion of a student surrendering to or becoming swept away by the flow and currents of an instructor's teaching seems to have been replaced by an almost adversary relationship. The re-establishment of the teacher as mentor may be a more desirable goal than the development of electronic learning aids. Oftentimes trust in machinery replaces faith in teachers, even among educators. Perhaps an experience such as participation in this activity would be a valuable part of every undergraduate's early development as a student. In any case, there does appear to be a real need for an enhancement of the appreciation for what university teachers try to do, thereby perhaps shrinking the barriers to receptivity that seem to loom so ominously at a large institution such as the University of Maryland.

BIBLIOGRAPHY

1. Lasley, J.F. 1979. My successes and failures in teaching students on campus. Journal of Animal Science 48:711.

2. Rice, V.A. 1963. Education - ends and means. Journal of Animal Science 22:232.

3. Taylor, R.E. and R.G. Kauffman. 1983. Teaching animal science. Journal of Animal Science 57:171.

4. Whiteman, J.V. 1964. Terminal animal husbandry courses, what should we teach and how. Journal of Animal Science 23:283.

5. Willham, R.L. 1968. New goals in undergraduate teaching of genetics. Journal of Animal Science 27:888.

PUTTING FAMILIES INTO FAMILY SOCIOLOGY

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The Department of Family Medicine at Brown University offers a course in family sociology to undergraduates. The course is designed to introduce students to an expanded biopsychosocial paradigm in medicine. Instead of focusing upon a biological model of illness that stresses disease, physical malfunctioning, and chemical abnormalities, the course presents a model that includes a range of factors; namely, social class, ethnicity, stress, social supports, income, occupation, expectations, proclivity to use traditional medical care, family dynamics. In short, the model brings the person's social world, including his family, onto the physician's examining table.

From the perspective of family physicians, such an expanded model justifies itself daily in general practice. Physicians routinely see families; and, in seeing families, physicians intuitively grasp the futility of designing treatment plans or making diagnoses without considering the person's family dynamics.[1,2] Family physicians have used the term homeostasis to describe family functioning; and physicians recognize that homeostasis both influences and is influenced by individual physical health. Indeed, physicians who record office visits and telephone calls from family members will generally see a clustering of crises, both medical and nonmedical, where calls for assistance peak at times that correlate with changes in family homeostasis[3].

Careful research has documented the validity of this expanded biopsychosocial paradigm. Statistics suggest relationships between maternal stress and delivery,[4] between bereavement and illness,[5] between skewed family dynamics and control of adolescent diabetes,[6] even between loneliness and cancer.[7] Family dynamics, moreover, vary with race, social class, and ethnicity.

Theoretically, moreover, a biopsychosocial model of illness complements medical sociological thought. In his schema of social deviance, Parsons[8] lists physicians as "agents of social control," along with social workers, clergy, and judges. In considering deviance as it relates to society's judgment that the person "needs" social work or legal or religious intervention, the person's family is a central item in any explanation. Only modern physicians, schooled in a biological model of health and illness, have eschewed considerations of the family as important to explanations of medical deviance.

Classroom presentation of theoretical models of health and illness, however, fail to help students appreciate the validity of those models. Even if students find the course interesting, they still may not appreciate that consideration of social and familial characteristics constitutes just as "good medicine" as consideration of bacteria counts or EKGs. Medical training is skewed to present a biological model of health; and even though physicians may recognize the need to consider factors beyond the patient's body, the reality is that the student and later the resident see patients alone, usually undressed, not in their homes, but in examining rooms. In 10 to 15 minutes allotted for an examination a medical student is hard pressed to cover basic questions about symptoms. For hospitalized patients, moreover, the student will see the family only peripherally, perhaps in the waiting room. Although undergraduate students have not yet embarked upon hospital or clinic clerkships, in their heavy load of laboratory courses they have begun to focus on medicine as a science, not a humanistic art.

To make students appreciate the intellectual validity of a family-centered model of health, the course developed by the Department of Family Medicine assigned each student to a family, chosen from the Family Care Center at Pawtucket Memorial Hospital. Students were asked to visit their families once a week throughout the semester, record their reflections and/or observations in a journalistic log, and complete a final paper that discussed theoretical tenet behind the expanded biopsychosocial paradigm in light of their observations of their "case" family.

The case study is useful for medical discussion. In rounds physicians present the "case of the week," and journal articles routinely feature a "case" that illustrates a particular problem. Not surprisingly, cases that are presented support the point the presenter wishes to illustrate. For example, the case of study generally reported in the Journal of Family Practice will illustrate the importance of family in making a correct diagnosis, while the New England Journal of Medicine's cases will rely upon technical details.

In assigning each student a family, the course gives each student his own "case study." If the family is a significant factor in either the etiology or the treatment of disease, the student's eight weeks should give him sufficient insight to recognize the paradigm as legitimate. For family physicians the "family is the patient,"[7] but knowledge of the family requires time, patience, and home visits. The undergraduates were able to spend at least 10 hours with the family in its home. Although some students complained that they did not yet know their families sufficiently to understand them, students probably got to know their "cases" far better than attending physicians. All students were able to draw "psychofigures" that suggested roles, relationships, and boundaries.

Final paper topics reflect the diversity of assigned families, as well as students' appreciation for the usefulness of a family perspective on health. Table 1 highlights some papers.

TABLE I

Family	Paper
1. 75 year old woman with Parkinson's disease, living with 77 year old caregiver spouse in single family home. Limited income. No support from children.	1. Student discussed diverse theories of inevitable caregiver stress and the need to "support" caregivers with financial and/or social help. This family received no assistance, either from social agencies or other family members, yet the couple was happy and content. Student postulated that long-standing loving relationship, coupled with a present orientation, contributed to family's happiness.
2. A 23 year-old unmarried woman living with 2 year old son and 46 year-old mother and teenage brother in first floor tenement.	2. Student discussed a stress scale, which predicated that the young woman, after one divorce, one separation, one miscarriage, one pregnancy, and one change of residence, within 18 months, was liable for serious illness. In explaining the woman's cheerful attitude and apparent fine health, student discussed the patient's social class, personality, and strong friendly bonds.
3. A 23 year-old unmarried Liberian woman living with boyfriend and new baby in low-income housing project. Two older children of the couple had moved to another state to live with patient's brother.	3. Student contrasted a middle class perception of the woman's hypothesized satisfaction with her family life, using an APGAR family satisfaction scale, with the woman's own satisfaction. Cultural differences in family networks and norms, as well as the woman's aspirations as an immigrant, were important to understanding this "case."
4. A middle-aged couple with 3 grown children and 2 twin teen-aged sons, one of whom was treated for hyperactivity. Family lives in first floor tenement.	4. Student discussed the changes in roles and routines that resulted from prescribed treatment and intervention for hyperactivity.

Unlike courses that involve field work or internships with agencies, this course presented few administrative obstacles. The Family Care Center is a Brown-affiliated teaching unit at a community hospital. The Family Care Center social worker and residents suggested families who would enjoy weekly visits throughout one semester. The sociologist randomly assigned students to willing families. If a family wished to terminate the visits during the semester, a student would be reassigned. Indeed, after a death in a "case" family, one student was reassigned.

The case study method is a useful classroom tool in so far as it focuses class discussion and invites student observations and comments. When the cases were real families, the advantages were stronger. After several weeks of visiting, not only did students care about their families, but they were knowledgeable discussants of their family's dynamics. In classroom seminars students analyzed theories critically, submitting their own observations and sharing their experiences and reflections with their peers. Students could hypothetically apply diverse theories of family functioning to their families, speculate on changes over time in roles, and give a broader context to consideration of individual illness.

1. Richardson, Henry. Patients Have Families (New York: Commonwealth Fund, 1945).

2. Smilkstein, Gabriel et al. "Clinical Social Science Conference in Biopsychosocial Teaching. "Journal of Family Practice (February 1981): 347-353.

3. Kellner, R. Family Ill Health (Springfield, Illinois: C. C. Thomas 1963)

4. McDonald, Robert. "The Role of Emotional Factors in Obstetric Complications: A Review." Psychosomatic Medicine 30 (1968): 222-237.

5. Parkes, M. "The Effects of Bereavement on Physical and Mental Health." British Medical Journal I (1964): 274-276.

6. Minuchin, S. Families and Family Therapy (Cambridge: Harvard University Press, 1974).

7. Schmale, Arthur. "Relationship of Separation and Depression to Disease." Psychosomatic Medicine 20 (1958): 259-271.

8. Parsons, Talcott. "Definitions of Health and Illness in the Light of American Values and Social Structure." Jaco, E. Gartly, ed. Patients, Physicians and Illness. Second Edition (New York: Free Press, 1972), 197-227.

9. Schenck, Thomas, "The Patient Is The Family: Rhetoric or Reality?" Social Science and Medicine.

10. Smilkstein, Gabriel. "A Family APGAR." Journal of Family Practice 6 (1978): 1231-1239.

ON NOT-TEACHING PSYCHOLOGY: AN EXPERIMENT IN ADULT EDUCATION.

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The experiment to be described was carried out by adult students of Psychology during the last three years of a four-year class organised jointly by the University of Cambridge Board of Extra-Mural Studies and the Cambridge branch of the WEA.* Students in such classes are normally-balanced adults of all ages with above-average intelligence who despite widely-differing formal academic backgrounds are prepared to work hard at acquiring an objective understanding of human behaviour so far as such knowledge is open to systematic study.

In general terms the underlying aims of adult education include deepening and broadening the student's natural desire for knowledge, providing him/her with the skills to acquire and communicate knowledge and offering continuing opportunities to build up knowledge. The general difficulties that accrue from lack of uniform academic background and from the wide-range of adult students are compounded so far as psychology is concerned by the fact that students of psychology are learning about behaviour - including their own - in the stubborn presence of the psychology they have subjectively and often painfully acquired in everyday life outside formal teaching. There is a great and lasting struggle in reconsidering acquired psychological opinions, beliefs and prejudices even in the light of subjective knowledge with which they are inconsistent. Further, where adult students have an imperfect grasp of the values as well as the limitations of objectively-produced evidence they tend to be selective or capricious in fitting new evidence of this kind into their pre-existing subjective psychology with the result that the usefulness of such evidence is often dissipated and may be lost altogether. The experiment described here was an attempt to overcome or at least minimise these difficulties.

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* Workers' Educational Association

The Cambridge experimental learning group consisted in its final year of eleven students, twelve with the tutor, who had enrolled on a course called THE INDIVIDUAL IN SOCIETY. The first year consisted of a largely theoretical introduction to the subject. The experimental learning group grew in the second year out of a suggestion to the class, who were expecting to continue with a theoretical approach (and therefore were in some ways untypical of students who enrol specifically for a group approach to learning) that they might profitably experiment with a more precise and empirical method. The idea was that the conditions that research findings indicate are necessary and sufficient to produce what Americans call 'good outcomes' in psychotherapy might be useful in producing valuable increments of knowledge in a learning group. The conditions that work towards success in psychotherapy are:

> empathy, defined as the ability to hear what another says
> without distorting it, and the ability to say it back accurately;
> genuineness, defined as the readiness to communicate one's
> experience without inhibition;
> nonjudgemental warmth, defined as affection for another that
> is free from conditions
> and, readiness to accept change.

These are not thought of as absolute, everpresent qualities, but as qualities that come and go in normal social intercourse, and which may well be incompatible with each other on occasion. Given this, when they are present in a psychotherapeutic situation then there is a reasonable chance of the client being helped. When they are present in everyday life then normal relations, the interchanges between people who are not emotionally or mentally disabled, may be more open to conscious appraisal. It was to test out the latter hypothesis that the Cambridge experimental group was set up, though at first its members were uncertain and apprehensive. What would be learned was not defined. During the three years' work as an experimental learning group, four or five dropped out because they found the method unacceptable after trying it out. Others joined and in the fourth year of the class, the third of the experimental learning group, there were four teachers (including the tutor), two housewives, one of whom had been a teacher, two university administrative officers, a local government officer, a medical secretary, a professional philosopher and a business executive; twelve in all. The age-range was from the late-twenties to the late-fifties and intelligence levels were normal for this kind of class. The balance between the sexes was weighted heavily towards women, the 'best' year in this respect being the fourth when there were four men. It was felt generally that an equal balance would have produced group behaviour more representative of a normal social group. There were wide differences in formal academic background as well as, initially, in self expression but problems rooted in these differences diminished gradually though with difficult and not completely.

Over the last thirty years the traditional methods of teaching Psychology have been supplemented by group-methods, the precise usefulness of which is still questioned. Students using a group method spend their time studying the behaviour present in the group, concerning themselves with, for example, the processes of social perception and interaction. This is similar to what happens in therapy-groups and in a learning group care needs to be taken therefore to maximise the learning potential of the group and minimise any therapeutic tendencies, which may not be wholly avoided but would obscure the learning process were they allowed to dominate group interaction. Not all learning groups are successful in maintaining their raison d'être, nor is it entirely clear whether the Cambridge experimental learning group succeeded entirely in this. Nor in any case is the difference between learning and therapy sufficiently well established for group members at any one time to be clear about the balance of learning against therapy. It is interesting to note just how strongly classical therapists like Freud, Jung and Alder towards the end of their working lives stressed the learning aspects over the therapeutic aspects of therapist-client behaviour. Jung insisted, for example that in successful therapy both the client and the therapist educate themselves and each other.

However, one technique that tends to emphasise the learning function of a group is to limit what is discussed by drawing a line, as it were, round the group and admitting as subject matter for comment and analysis only experience that relates to what has happened within the group. This powerfully restricts what can be seen while at the same time bring to view 'molecular structures' that normally would be unseen. One of the interesting facts to emerge from this technique is that 'molecular psychology' becomes open to systematic study though not necessarily to quantification.

For adult students who have no experience of experimental psychology there is a further gain in that by thinking of the learning group as an experiment they recognise the limitations and compromises that experiments require. As a consequence, they can reconsider their own use of experimental findings they read about in books or journals and which they may have misused, by rejecting its evidence or inflating its value, for example. Admittedly what is learned about behaviour in a group is true only for that group and may not be true for another such group nor for the groups into which society divides and redivides itself. Students who use the learning group method come to be able to judge for themselves the degree of caution that needs to be a constant feature of all extrapolations from experimentally derived evidence.

There are more particular drawbacks to the learning group method of which two will be mentioned. By concentrating on the group and eliminating other behaviour from study there is the serious possibility that trivial behaviour may be given significance that it does not carry. Common sense and a sense of humour generally are effective checks against this though there is not always unanimity over what is trivial and frequently what some experience as trivial is felt to be important by others. A second drawback is also an outcome of concentrating on the group. Much behaviour in the group is motivated by experiences and events outside the group and by cutting out the outside experience frustration is created and frequently communicated. This requires very thoughtful support and analysis from group-members so that what can be considered is separated accurately from what cannot be considered, but even when this is achieved - which is not always the case - the frustrated member may still have to accept and 'carry home' frustration that is not resolved in the group.

The aim, then, was to create an experimental society of twelve individuals within which each was presented with opportunities to communicate his/her experience of him/herself, of others or of the group and its processes, and then with opportunities to check out with others, when interested and willing, to what extent their experience matched or differed from his/her experience of the same changing events. To preserve the learning function and to provide both an intellectual discipline and as much objectivity as possible, members undertook to offer only their experience of what had happened in the group. This undertaking was achieved with a high degree of success. (If the experiment is repeated it might be useful to invite students also to undertake to measure what and how much is learned. This is theoretically possible, using techniques like the Kelly Repertory Grid though as students inevitably learn different things the difficulties of summarising and reporting what is learned would remain formidable). Students also undertook to offer so far as they could the four qualities mentioned above as necessary conditions for success in the psychotherapeutic situation. This they found hard to do and the levels of success were low but not insignificant. Empathy, the ability to listen to what another says without distorting it requires a high, sustained concentration and frequent checking out that one is hearing accurately and this was extremely difficult to do, partly out of the emotion attaching to much of what happened in the group, partly out of the limited span of such concentrated attention, partly out of the constant temptation to be diverted into purusing more than one line of enquiry at a time whether the result of preoccupation with oneself or others, and partly out of the paradox that empathy does not always go along with, say, genuineness. Students found that often they were on the one hand expected to elicit from another what s/he thought and felt at a particular time and on the other hand to accept warmly and non-judgementally the other's wish to remain silent. The paradoxical nature of the learning-venture was difficult to understand and work with at first but gradually students became aware of the fact that it was the very paradoxicality that kept the group viable and furthered the progress of the experiment. Without the paradox, inquisitorial pressure and general intrusiveness within the group might have undermined the progress made.

Students found that they were collecting a lot of empirical information and in the first years looked to the tutor-leader to provide theoretical frameworks and hypotheses to aid the synthesis of what went on. As the group matured, others developed skill at this task and it became clear that for seven students in the final year the less the tutor-leader emphasised his role the more effectively the group functioned as a learning group. Four in the last year still looked to the tutor-leader for theoretical light and they, as did five others, discussed their theoretical ideas either in individual supervisions with the tutor-leader or by writing short papers to each other, or both.

In this way each student was offered a continuing chance to learn about the behaviour of the individual in a society of twelve people. The task was more difficult than that facing the experimenter in a psychological laboratory and the researcher working in the field, because it was not possible to isolate for study a single experimental variable. This is a handicap. Whatever place the experimental learning group has in the repertoire of the teacher and student of psychology it will not supplant direct methods calling on experimental and research evidence. To be weighed against this handicap are advantages that accrue from the student being faced with actual behaviour as a basis for theoretical analysis and synthesis.

The first sessions were punctuated by long, embarrassed silences and much lowering of eyes. Students did not want to be the one to speak first and did not wish to offend others by looking at them, nor to elicit or solicit responses by eye-to-eye signals, nor put themselves in such a position that responses might be elicited from them. Interposed between the embarrassed silences were attacks on the tutor-leader either for not being a good tutor or for not being a good leader. The force of these attacks together with the strength of feeling of those who defended him provided the first power, the first energy for the life of the experimental learning group. And since the initial few weeks the group has worked vigorously. The following are some of the topics students claim have interested them:

interaction between individuals, its 'final common particles';
power, status and role behaviours;
linguistic and non-linguistic communication and the
rules/conventions that characterise communication;
the limitations of span of conscious awareness both of
other people's behaviour and of one's own;
the seemingly unlimited span of normally unconscious (subliminal)

awareness that become available for study within
the learning group;
the effect (and lack of effect) of individual and
group expectations;
leadership and its changing nature;
social learning, unlearning and relearning;
dominance, submission and 'scapegoating';
the self, its boundaries and its responsiveness
to change;
and so on.

The accuracy, sophistication and extensiveness of the descriptions by students of these and many other aspects of behaviour indicate that the quality and complexity as well as the objectivity of the learning is significantly high. Characteristic of the learning group experience is the way that students take it in some kind of turn (the natural history of each turn is a fascinating and complex study in itself, involving group and individual voluntary and involuntary processes at many levels of consciousness and unconsciousness) to expose themselves to encounters that in practice often prove painful. 'For in much knowledge is much grief; and he that increaseth knowledge increaseth sorrow'. This verse from Ecclesiastes is meant, presumably, to refer to the effect of prophetic vision on the Old Testament prophet and his people, but freed from its historical and religious contexts it rings sound and true of the experimental learning group. Students find that they have to revise and in some cases abandon prejudices, beliefs, and opinions and this results on occasions in very intense and unpleasant feelings. Embarrassment has been mentioned and among other feelings, anger, shame, stupidity, uselessness, helplessness and loneliness are commonly experienced and appear to be inevitable features of the experimental learning group, as of life generally.

Unexpectedly the pain of some encounters is balanced by powerful, positive emotions that members may feel from time to time. This is one of the extraordinary outcomes of the experimental learning group method and one that may be of interest not only to social psychologists but also to the empirical philosopher and the empirical theologian of whom there are too few. Underneath group behaviour, at its deepest level it seems, some students experience strong feelings of joyous affection. On the occasions that students discover this feeling they report that the affection - some call it 'love' - is for oneself, for others and for knowledge. Further, it may be accompanied by heightened experience - visual, tactile, proprioceptive, aural or intellectual. Such experiences fall outside traditional psychological research and experiment (except for the descriptions that are occasionally published of experiments with drugs) and it may be one of the unique advantages of the experimental learning group that it includes in its range of reference aspects of human behaviour that otherwise are excluded from systematic study. It would be interesting to attempt to quantify these experiences and the increments of learning that students claim.

There are other gains that students claim for the method. The fact that each student is both experimenter and experimental subject redefines to some extent and in very interesting ways the boundaries between subject and object in Social Psychology and has led to outcomes that are strictly outside the purview of a description of the group as such. Some students have been led to reconsider the boundaries between, for example, psychology, philosophy and theology. The empiricist whether student or teacher may well find that the experimental learning group method has wide and profound applications.

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The Teaching Game...A Simulations/Games Approach for the Serious Teacher

> I hear and I forget
> I see and I remember
> I do and I understand.
> Confucious

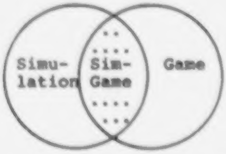
As teachers we face the continuing challenging of involving our students in the information we present. We know our subject, that's why we teach, but, there are always methods to add to the impact of material. My suggestion is to review simulations/games (sim-games) as another way of adding impact and dimension to the subject.

A Story. In my spring semester management course I encountered Ms. Bonnie, a classic sufferer of the Night Student Blahs (NSB) syndrome. Ms. Bonnie seemed to be an excellent student...she did well on tests, seemed to understand the class lecture and always paid attention to class proceedings. But, she did all this with a straight-ahead, emotionless, blank stare. She never reacted, never smiled, never nodded... she was a classic NSB syndrome victim.

Then I introduced a simulation/game utilizing a Monopoly-style boardgame to present the textual material. Much to my surprise, Ms. Bonnie was in the forefront, laughing, acting out the role plays and awarding chips. After this dazzling performance, however, Ms. Bonnie reverted to her NSB posture during the lecture.

As sad as it was to lose Ms. Bonnie as a lecturer, I coveted the ability to involve her as a "total" teacher who utilized simulation/games. If the primary goal of the classroom is to present information, what did it matter whether it was by lecture or by simulation/game? And, the simulation/game was able to give the players immediate feedback to their answers and behavior in a non-threatening atmosphere. In this one incident with Ms. Bonnie I learned that simulation/games are more than just an excursion from classroom lecture...sim/games have an impact on learning and even attitudes.

Background. Perhaps the mention of simulation/game conjurs images ranging from video arcades to the set of structured experiences of Pfeiffer and Jones. These images are more incomplete than incorrect. Simulations/games include methologies many instructors already incorporate in their classrooms including case studies, icebreakers, mock trials, class debates, and even tinker toy exercises. The simulation/game is any exercise or contest that is based on a model of reality.



.Simulation. Anything which simulates or models reality. When we use case studies, models, graphs, et al to portray the real world environment, we are using the reality or content of simulation in our classroom.

.Game. Any activity in which people agree to abide by a set of conditions in order to create a desired end or state. Think of the rules we must obey to conform to the game of golf. It would be so much simpler to just walk over to the hole and drop the ball into it rather swinging at the ball with a weighted stick. But, those are the conditions we must abide by in order to play and win at the game of golf. The game, then, is the process or framework in which we present our material.

.Simulation/Game. A sim/game is the CONTENT we present within the PROCESS...like a picture presented within a frame. In fact, when we select the PROCESS, such as a case study, we can then "load" it with the material which reinforces our lesson material. It is in this "loading" procedure that we tailor the material to our individual classroom needs.

Important Features of a Simulation/Game: A Checklist. A simulation/game should provide impact, be flexible and be playable. If these three features are addressed then the simulation/game should provide measurable learning even in brief playing sessions.

.Impact. A simulation/game can provide great impact to the lesson material that might be difficult to present in a lecture format. In STOP Sexual Harassment, a sim/game about sexual harassment in the workplace, only the women rolled a six-sided die that had two blank faces, thereby advancing the women only 4 spaces in one roll. This simulated the atmosphere that women could not advance as rapidly as men in the organization. It also was an excellent discussion starter amongst the participants.

.Flexibility.

(1) Time. The sim/game should be short enough to be used in your available teaching time. To the 1 hour lecturer this means that the sim/gam should be no longer than 20 minute exercises tailored to your material.

(2) Portable. The sim/game must be easily transportable to your classroom. With the growth of off-campus facilities, this becomes even more important.

(3) Adaptable. The sim/game must be easily converted to your classroom needs. It should be able to preview, overview, complement or review the material. The sim/game must complement your style and your material. If you are not the "games" sort, then case studies, role plays or other class interactions would prove to be more suitable.

(4) Affordable. To many instructors the word "affordable" is a primary consideration. A modest course cost of no more than $50 would probably still startle our respective departments. For those of us on restricted budgets, the McGraw-Hill books on Games Trainers Play at $15.00 per book meets this criteria. For those of us with slightly larger budgets, the Pfeiffer and Jones Structured Experiences published by University Associates, would be very helpful.

.Playability.

(1) Fun. The simulation/game should create a game or 'fun' spirit. The players, in their quest to earn more points or dollars or chips must demonstrate the information or lose in their quest. This "win or lose" atmosphere often becomes more important than the information being demonstrated and, thereby, creates a game or fun spirit.

(2) Balance. There must be an appropriate balance between skill and luck. Too much chance or luck causes the game to become one big dice roll, with little or no learning involved. Too much knowledge or skill quickly makes the simulation/game go very slowly...become very b-o-r-i-n-g.

(3) Easy Yet Complex. The simulation/game must be easy to learn. The rules should be comprehensible within 15 minutes of the first playing. Subsequent playings will involve a quick review and then play.

But, the simulation/game should still be complex enough in its play to present a challenge to the players. The information required should push the players to perform under a modified and slightly stressed real-world atmosphere.

(4) Game Rules. Game rules, if properly constructed will tell the players:

.what they are allowed to do

.what they are NOT allowed to do

.provide an accounting system of who is winning and/or losing

.show when the game is over.

(5) Recognizable. Players often learn a simulation/game much more easily if the gameboard is an old 'friend' such as Monopoly, Bingo, War, Crossword Puzzles, or even Examination (your testing) Format. The use of these old friends allows the student to transfer their understanding of that game to your tailored gameboard. After all, you are more interested in the students understanding your material than in their learning a new game format.

Introduction and Use of a Simulation/Game.

A recommended procedure for using a sim/game in your classroom involves four steps.

(1) Introduction. Establish an appropriate atmosphere in which the students will play the simulation/game. Re-emphasis of important information is one method. Another method is to pose questions and allow the class to respond with an assortment of answers.

(2) Briefing. Introduce the idea and rules of the simulation/game. Establish the playing groups and set the time limits of the playing activity.

(3) Actual Playing. During this time the players distribute the sim/game materials, interact with the subject matter and with each other, determine a form of accounting system and then bring closure to the playing activity.

(4) Debriefing. This is, perhaps, the most important process of the simulation/game. The instructor re-establishes the importance of the information and assesses, with the class, how the information was learned and how the information fits into the classroom presentation.

Conclusion: Is the Simulations/Games Approach Worth It?

We started with the hypothesis that presenting information in a format which involved the student would add impact and dimension to our subject. But, to even the most avid advocate of simulation/games, there are many "costs" and "risks" of using this approach in the classroom.

For one, there is the time needed to prepare, set-up, play and process the sim/game. This time takes you away from other activities both within and outside the classroom.

Secondly, there are problems in acquisition and production of appropriate simulation/games. Besides the outlay of monies for the sim/game, there are considerations of tailoring the material for your own needs which will involve xerox or ditto machines, paper and other assessories, such as pawns, dice, et al.

Thirdly, there is the change required in your classroom format. You will have to turn control of your class over to the simulation/game and you will have to control the confusion that comes with active class participation.

Lastly, there is the risk of failure. After all the expenses noted above, there still is no guarantee that the simulation/game will enhance your classroom material. In fact, there is the risk that the information will become misplaced in the students' eagerness to master the game. This brings additional confusion to the learning process, not to mention embarassment to the instructor.

The Payoff. For those of you have followed all the logic of the arguments against the simulations/game, the payoff may seem small compensation. For all the payoff entails is a learning experience that will go far beyond the classroom. The payoff is a learning experience that will be remembered long after your class. For all the 'slings and arrows' you have suffered in searching out the proper simulations/game, acquiring and tailoring it, presenting and processing it... for all these costs you will merely receive the pleasure of your class becoming so involved with the subject matter that they might forget your presence in the classroom. And, in future classes, they will refer to their learning experience as if it happened just yesterday.

For all your risks in bringing a simulation/game experience to your class you will have the moment of joy of watching a Ms. Bonnie, NSB syndrome victim, show a semblance of life right before your very eyes. And, after all, isn't this what teaching is all about?

Some Simulation/Game Resources: A Bibliography of Sorts

ORGANIZATIONS

NASAGA: The North American Simulation and Gaming Association. Annual membership: $25. R.W. Thomas Nichols/Treasurer/ Box 100/Westminster College/New Wilmington, PA 16142.

ISAGA: The International Simulation and Gaming Association. Dr. Cathy S. Greenblat/34 Bayard Lane/Princeton, NJ 08540.

BOOKS

Fleugelman, Andrew, ed. The New Games Book. Garden City, NJ: Doubleday/Dolphin, 1976.

Greenblat, Cathy S. & Richard D. Duke. Principles and Practices of Gaming Simulation. Sage Publications, Beverly Hills, CA 90212.

Heyman, Mark. Simulation Games for the Classroom. Phi Delta Kappa/Eighth & Union/Box 789/Bloomington, IN 47401.

Horn, Robert E. & Anne Cleaves. The Guide to Simulation Games for Education and Training. Sage Publications/ Beverly Hills, CA 90212.

Pfeiffer, J. William & John E. Jones. A Handbook of Structured Experiences for Human Relations Learning. Several Volumes. University Associates/7596 Eads Ave./LaJolla, CA 92037.

Thiagarajan, S. & Harold D. Stolovitch. Instructional Simulation Games. Educational Technology Publ./ Englewood Cliffs, NJ 07632.

WORKBOOK

Scannel, Edward E. Games Trainers Play, McGraw-Hill Publications.

Scannel, Edward E. More Games Trainers Play. McGraw-Hill Publications.

SIMULATION/GAMES

Brookside Manor: A Gerontologial Simulation. Inst. of Gerontology/Univ. of Michigan/520 E. Liberty/Ann Arbor, MI 48109.

Conducting Planning Exercises. P.A. Twelker/Box 46/ Black Butte Ranch, OR 97759.

STOP Sexual Harassment. The Game Group/9728 Byeforde Road/Kensington, MD 20895.

PERIODICALS

Simgames: The Canadian Journal of Simulation and Gaming. Simgames/Champlain Regional College/Lennoxville, Quebec/ Canada J1M 2A1.

Simulation & Games: An International Journal of Theory, Design and Research. Sage Publications/Beverly Hills, CA 90212.

THE STUDY TOUR: A VEHICLE FOR IMPROVING THE QUALITY OF TEACHING

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European Division

Over the past two decades a major effort has been made to improve college education. These attempts have been aimed at both the techniques of teaching and the curriculum. In the social sciences in general and in sociology in particular this has resulted in an increased emphasis on improving the relevance of courses. In the 1960's and early 70's relevance was defined as linking the social sciences with contemporary social issues. In the later 1970's and 80's, with a declining number of students majoring in the social sciences, relevance was defined in terms of applied courses. However, many of these service courses to business, science, and the health profession do little more than repackage existing courses under new titles. Further, too many of these courses are either too abstract (theoretical) for the non-social science major or do little more than provide the student with 101 facts to memorize. If the social sciences are to provide meaningful electives to non-social science majors, these courses must show an improved ability to illustrate social theory and social science research as salient to the student's future success as health professionals, businessmen, or physical scientists.

The study tour is an excellent vehicle to illustrate the relevance of sociology to the non-social science major. The purpose of this paper is to describe some of the advantages of the study tour as a vehicle to improve the quality of teaching. Our discussion is based on a study tour which the two authors conducted. After discussing some of these advantages, the unique problems related to administering this type of course will be addressed. However, before entering into this discussion, a brief review of the details of our study tour are in order.

The Tour: A Description

On October 16, 1983 the two authors along with 23 business and social science students from the University of Maryland European Division set out from Heidelberg, Germany on an 8-day study tour of factories in Gothenborg, Skovde, Kalmar, and Orrefors, Sweden. Briefly, we were interested in studying and observing the recent attempts by the Swedish car manufacturer Volvo to reduce worker alienation by humanizing the work environment. Toward this end we visited the Volvo final assembly plants in Gothenborg and Kalmar and the Volvo engine division in Skovde. Further, we visited a craft center in Gothenborg and a glass factory in Orrefors. The latter two site visits were considered essential as it is craft-type work processes that the Swedish car manufacturer is trying to replicate and they served as an important basis for comparison.

In general, all of our visits included a 2-3 hour observation period and a 1-2 hour discussion session with workers, trade union representatives and/or management. On two occasions we ate lunch with various representatives. The site visits were complemented with approximately 15 hours of lecture and class discussion concentrating on relevant sociological theory and methods as well as problems, implications, and implementation strategies. Course requirements included having the students keep a logbook of their observations, a final exam, and a research paper. Upon successfully completing the course the students received 3 upper-level credits in Management Studies.

The Study Tour: Some Advantages

The objective of this course was to illustrate how the sociological imagination can be a useful tool to solve contemporary business problems. The course was designed to show the relevance of sociological theories of alienation in explaining the multiple causes of alienation and directing the business person towards solutions. Further, the student was introduced to the basic research methods in sociology including obtrusive and unobtrusive methods of identifying alienation. The students therefore had two intellectual tools to examine the work site--a theoretical framework to ground his/her observations and methodological tools to assess the workplace for the presence or consequences of alienation. Hence, the study tour not only provides a medium to introduce the student to the subject, but graphically illustrates the importance of the problem, theory, and research strategies of sociology.

The site visits allow the student to see and hear for him/herself the relevance of social theory and methods. The sites therefore act as a laboratory for the student to apply newly acquired knowledge and to test the validity of the ideas being transmitted. When the student becomes an active participant in the learning process, the experience is greatly enhanced. "Great opportunity, never to be forgotten," is the way one of our students phrased it in an evaluation of the course.

By interrelating theory and methods with experience, the study tour provides an opportunity that is difficult to duplicate in the classroom i.e., total student involvement. In the traditional classroom student involvement is generally limited to 50 minute blocks of time. The study tour immerses the student in the subject for 9 to 12 hours a day for a 7 to 10 day period. On our study tour the typical day started with a pre-site briefing at 9:00 AM and ended with a lecture and class discussion after supper. Immersing the student in an acedemic topic for a concentrated period can have the same benefit as has been found in immersing a language student in an environment that requires constant use of the foreign language being studied. The sociological perspective is as alien to many non-sociology majors as a foreign language and by immersing the student in study the likelihood that the student will develop a working knowledge of the sociological imagination is improved.

The recipient of knowledge must believe that the source of his/her information is credible. For some, unfortunately, sociology has a credibility problem. Our study tour addressed this problem by allowing students to meet with business and union leaders who confront daily the problem of worker alienation and work redesign. As the students talked with more and more business and union leaders their initial skepticism about the sociological orientation decreased. As the tour progressed, the theoretical ideas presented in early lectures were observed to be relevant to the problems experienced and the solutions proposed by Volvo. As one of our students noted, "It simply just gave me another perspective from which to view things and made me think about some things I never really considered which to me is the whole goal of learning."

An additional advantage which facilitated learning was the comparative nature of the multiple observations that we built into the study tour. Comparative analysis was possible in at least four different ways. First, we observed work redesign experiments with varying degress of sophistication. Our students were able to observe work redesign at both a plant built around a traditional assembly-line (Gothenborg) as well as at Kalmar which was designed and built in 1974 around the whole idea of making work less alienating for the workers involved. Another type of comparison revolved around the similarities and contrasts underlying the various techniques being implemented, namely autonomous work groups, participative management, and job rotation. In addition, we saw these innovations being implemented in the final assembly process (Gothenborg and Kalmar) as well as in the engine assembly process (Skovde). Finally, our students were able to observe not only a traditional assembly-line and the various innovations being implemented, but they also observed traditional craft-type work at Kronhaus Block (Gothenborg) and a batch assembly process at Orrefors. The observations at Kronhaus and Orrefors were intended to illustrate not only other means for organizing production, but also how these modes of organizing production enhance or limit the amount of alienation compared to the innovations being implemented on the automobile assembly-line.

One final advantage to a study tour of the kind we conducted is the opportunity students have to interact with people of a foreign country and share firsthand their feelings and knowledge etc. During all of our visits, students meet formally and informally with workers, union representatives, and management. As Skovde, our students were relatively free to walk around the plant and many of them talked to workers right on the factory floor. At Skovde and Kalmar we ate lunch in the plant cafeteria and our students were encouraged to seek out workers for informal conversation. In addition, students were able to experience the culture of Sweden. While not part of our study tour, it is impossible not to learn a great deal about diet, clothing styles, architecture, customs etc.

In conclusion, the strength of the study tour as an educational tool is that it provides an environment that facilitates the development of a working knowledge of an intellectual idea. By immersing the student in the learning experience, and by presenting him/her with the intellectual tools and experience (site visits) to test the validity of this new knowledge, the non-sociological student can be introduced to the usefullness of the sociological imagination.

Administering the Study Tour: Some Tips

While there are several problems associated with a study tour, perhaps the most interesting and unique center around the administrative problems encountered. The following is intended to attune the reader to some areas of importance relevant to administering a study tour.

Our preparation started back in January, some 10 months before we finally departed. First we had to get the course approved. This was merely a formality as the European Division of the University of Maryland has been conducting study tours for several years and the process is fairly standardized and routine.

After we were given the green light, we decided that an exploratory trip to Sweden would be advantageous. We reasoned that we could work out several wrinkles and many unknowns by doing a dry run. We could check out the roads and mileage and establish where the rest areas and restaurants were for lunches and dinners. Further, we could go to the various hotels and inspect them not only for their accommodations and location but also for their proximity to the plants we wanted to visit. Most importantly, we could visit the various plants and observe what each had to offer in terms of work redesign.

While it is true that most of the information we gained from our exploratory trip could have been obtained through the mail or over the telephone, it is also true that there is no substitute for experience. For example, many hotels that we found through guidebooks proved to be too far removed from the center city even though they advertised having a central location. Peripheral central maybe, but far from center. Also, some of the cheapest and therefore most attractive hotels listed in the guidebooks were located in less than desirable areas of the city.

After returning from our exploratory visit we evaluated our situation and made some final decisions. We decided which hotels we would stay in and selected our mode of transportation. Train fare proved to be prohibitive so we decided to rent a tour bus. Because we would be travelling over 2,000 miles we decided to break up the monotony of the bus trip with an overnight boat ride from Kiel, Germany to Gothenborg, Sweden. The bus would accompany the boat so we did not have to make further arrangements for transportation once in Sweden.

With hotel and transportation decisions settled, we elected to go to a travel agent to make all the necessary connections. Rather than search independently for a bus company and handle all the necessary correspondence ourselves, we decided to rely on the experience and expertise of a local travel agent.

As anyone who has conducted a study tour knows, only the unpredictable is predictable. Even though we had taken every precaution, on one leg of our trip in October, at 9:00 Pm, 35 miles from our destination, we saw a flasing yellow light ahead and a back-up of some four or five cars. As it turned out, the wind had blown 3 trees across the road and it would be several hours before the way would be cleared. Turning to our maps, we found an alternative route and lucky for us we were in our hotel only 15 minutes later than anticipated.

Once the details of lodging and travel were taken care of, we turned to the administrative details of the academic agenda. As one might expect, there are several unique dimensions to this aspect of planning a study tour. First, because students are to be away from home for over one week, it is important to notify them in advance where they will be, when they will be there, and how they can be contacted in case of an emergency. Three weeks prior to our departure we mailed a detailed itinerary and course syllabus to our students so they would know their daily whereabouts and workload.

In terms of the instructor's own preparations, since one is gone an entire week or more, all notes, lecture materials, and classroom aides must be organized and taken along. Naturally, one would have the syllabus typed and copied beforehand, but in this case one also needs to have the exam(s) typed and copied before departing. Further, it is essential to take along a travelling, mini library. There is no guarantee that the students will have access to local libraries or that the libraries will have the latest material of interest to the students. To guard against these possibilities, it is perhaps best to take along a sampling of research/reference materials that you feel might be of interest to your students.

In conclusion, the administrative preparation for a study tour of over one week duration can, to say the least, be quite trying. Above all else, one needs to exercise good judgement, flexibility, and patience.

ASPECTS OF LECTURING

SATURDAY, 7 JULY

1100 - 1230

THE EFFECT OF TEACHER HUMOR ON CLASSROOM CLIMATE

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In the last decade, research on humor in educational settings has centered around four primary areas: (1) the general positive attributes of using humor in relation to learning and teaching (Adams, 1974; Ziv, 1976); (2) humor as an aid in retention and comprehension of lecture material (Gruner, 1970; Kaplan & Pascoe, 1977); (3) the use of humor to relieve test or task performance anxiety (Smith et al., 1971; Townsend & Mahoney, 1981); and (4) the effect of humor on perceptions of a speaker's ethos, competence and likability (Leak, 1974; Tamborini & Zillman, 1981). Despite a growing body of research on humor in the classroom, educators have not isolated clearly the humorous behaviors which are perceived to be supportive when used in teaching and which function to improve the social climate of class interaction.

Communicative climate is the social-psychological context within which relationships occur. Because communication is a process, the thoughts and actions of individuals involved in interactions affect each other and eventually a characteristic climate is created. This is especially true for situations in which individuals interact regularly. The classroom environment is an ideal setting for studying communicative climate. Teachers and students meet regularly with the primary purpose of exchanging information and clarifying ideas through the process of communication.

Based on research by Gibb (1961), Hays (1970), Sundell (1972) and Rosenfeld (1983), several distinctions can be made about communicative climates. Gibb identified supportive and defensive dimensions of communicative climate and claimed that communication is more efficient in supportive rather than defensive climates. Hays found that students in classes with supportive climates retain significantly more information than those in classes with defensive climates. When teachers use supportive communicative behaviors, their students also tend to be supportive (Sundell, 1972). Also, liked and disliked classes and teachers can be distinguished by the levels of perceived supportive and defensive climates that students report (Rosenfeld, 1983).

Further exploration of communicative climate and the role played by humor in classroom climate should yield fruitful insight into the processes of developing a supportive and successful learning environment. The present study was designed to investigate the relationships between teacher-initiated humor and student perceptions of the classroom communicative climate. This research was founded on Martineau's (1972) model of the social functions of humor which explains that humor functions to alter the social climate of a group depending upon how that humor is judged (i.e., as disparaging or esteeming) by the group members.

Three humor conditions were identified in this study: tendentious, nontendentious, and no humor. Humor that is derogatory or ridiculing and that masks themes of hostility or aggression, is labeled tendentious humor (Freud, 1905/1960). Enjoyment of this "biting wit" stems from the expression and perception of socially unacceptable motives through the disguise of joking. Humor that is void of hostility is more innocent in character and is labeled nontendentious humor (Freud, 1905/1960). In nontendentious humor, enjoyment is derived from the joke structure alone. Puns and word play are common types of nontendentious humor. No hidden motives are intended or perceived. Rather, nontendentious humor provides a playful reprieve from reality (Wilson, 1979).

Classroom communicative climate was examined in two dimensions: supportive and defensive. According to Gibb, on-going interactions and relationships are developed through supportive and/or defensive communication. Through these interactions, and the resulting relationships, the perceived levels of supportiveness and defensiveness influence a group's unique social climate (Gibb, 1961).

A supportive communicative climate is characterized by efficient communication--that is, communication that has few distortions, effective listening behaviors and clear message transmission. "When people feel supported and comfortable, they are able to perceive better. People who sense that they are accepted and understood tend to be released from their own defensiveness and tend to reach out in counteracceptance and counterempathy toward the other members of the group" (Gibb, 1960, p. 123).

As the communicative climate develops in a classroom, any perceived threat to an individual's ego serves to diminish supportive communication (Gibb, 1961). Perceived threats to the ego increase defensive reactions in individuals, resulting in a defensive rather than supportive affect state to characterize the group. In the Gibb model, there are five defensive behaviors which are paired with supportive behaviors: equality/superiority, problem orientation/control, description/evaluation, spontaneity/strategy, and empathy/neutrality.

Research has indicated that classroom communicative climates are characterized by an underlying level of defensiveness (Rosenfeld, 1983). This characteristic state of defensiveness can best be explained by looking at the design of the educational system, the social structure of the classroom group, and the behaviors that teachers manifest to establish credibility and maintain control.

Since a major function of humor is to facilitate the social and psychological development of interactions, and these interactions affect the developing relationships in the context of classrooms (Jensen, 1960), this study is designed toward isolating and describing the effects of two specific types of humor on perceived classroom communicative climate.

METHOD

A sample of 280 Ss were selected from undergraduate courses in the departments of Speech Communication, Psychology and Sociology at the University of New Mexico. Of this sample, 100 Ss were involved in the initial rating of humorous items to be included in the main experiment, and the remaining 180 Ss were randomly assigned to one of six treatment groups, each group having 30 Ss. Ss in each of the six randomly formed groups heard a different audio tape of an instructor delivering a lecture on the importance of public speaking skills. Immediately after hearing the lecture, Ss evaluated the classroom communicative climate for that teacher by responding to 17 items on the Communication Climate Questionnnaire (CCQ), an instrument which measures the supportive and defensive dimensions of climate. Data was evaluated using a MANOVA for a 3 x 2 x 2 (humor type x sex of instructor x climate dimension) factor design and a series of t-tests.

The content of the ten-minute lecture was taken from an introductory text on public speaking. A female and male, both familiar with public speaking skills and with the technology required to record a quality audio lecture, were asked to produce the audio tapes. The content of the lecture was consistent for all conditions. The humorous items for each treatment (tendentious, nontendentious, no humor) were recorded separately and edited into the lecture during the final editing process.

RESULTS AND DISCUSSION

Analysis of the data resulted in the following significant differences:

1. Results of the MANOVA indicated that across all humor and sex of instructor conditions, climate was perceived to be significantly more defensive than supportive ($F=3.56$; $df=1,171$; $p < .01$).

2. A teacher using tendentious humor is perceived as significantly more defensive (mean=28.2) than supportive (mean=24.5), $t=-3.78$, $df=59$, $p < 01$).

3. A teacher using nontendentious humor is perceived as significantly more defensive (mean=28.9) than supportive (mean=25.0; $t=3.62$, $df=59$, $p < .01$).

4. A male teacher using nontendentious humor is perceived as significantly more defensive (mean=30.0) than supportive (mean=24.4; $t=-3.39$, $df=29$, $p < .01$).

5. A female teacher using tendentious humor is perceived as significantly more defensive (mean=28.8) than supportive (mean=24.3; $t=-3.20$, $df=29$, $p < .01$).

6. A teacher using no humor is perceived as significantly more neutral and detached than a teacher using tendentious humor ($t=-3.81$, $df=58$, $p < .002$), or a teacher using nontendentious humor ($t=-3.18$, $df=58$, $p < .002$).

7. A male teacher using no humor is perceived as significantly more straightforward and honest than the same teacher using tendentious humor ($t=-3.39$, $df=58$, $p < .002$) or nontendentious humor ($t=-3.64$), $df=58$, $p < .002$).

Based on the theoretical arguments concerning tendentious and nontendentious humor, the researchers expected a defensive reaction to tendentious humor but a supportive reaction to nontendentious humor. Results of the data analysis did not support the latter assumption: both forms of humor instigated more defensive than supportive student perceptions. It is probable that both the social structure of classroom groups and student expectations for teacher behaviors to be controlling and evaluative are responsible for the surprising defensive reactions to the nontendentious humor conditions. By definition, nontendentious humor does not communicate subtle control cues or evaluative strategies. Therefore, teacher-initiated nontendentious humor may well cause a rise in defensiveness because its playful nature contradicts student expectations for appropriate teacher communicative behaviors.

The lack of consistent research findings precluded firm predictions regarding the influence that the sex of the instructor would have on the perceptions of classroom communicative climate. Results of the data analyses show significantly defensive reactions to the male teacher using nontendentious humor and similarly high defensive reactions to the female teacher using tendentious humor. It seems that there is a reversal in perceptions of climate for male and female teachers using tendentious and nontendentious humor. Social expectations for the male teacher to be aggressive and domineering and the female teacher to be supportive and nurturing may explain the reactions observed in this study. Behavior which contradicts expectations generally causes individuals to react with suspicion and thus defensiveness. If the male teacher who is expected to behave in a domineering and aggressive fashion uses playful or silly humor, he is, in effect, delivering cues which are contradictory to role expectations. Likewise, if the female teacher who is expected to be nurturing uses aggressive or hostile humor, she too is breaking social norms for expected communication behavior. It appears that the violation of these expectations may cause the communicative climate for teachers to be characterized with defensiveness.

As noted earlier, item-by-item analyses of the CCQ were conducted to determine what specific teacher communicative behaviors were significantly affected by the use of humor. The results suggest that a teacher, whether male or female, using no humor is perceived as more neutral and detached than a teacher using either tendentious or nontendentious humor.

It was also found that a male teacher using no humor is perceived as significantly more straightforward and honest than the same teacher using either tendentious or nontendentious humor. These results may indicate that the humor used by the male teacher in this study may have been perceived as motivated by social control functions, resulting in perceptions of being strategic (defensive) rather than spontaneous(supportive). The strong defensive reactions by students to the perceived strategic communicator may outweigh any supportive perceptions possibly influenced by using humor. Humor that is not perceived as being open, honest and spontaneous may be more destructive to the communicative climate than an absence of humor.

Throughout this research it has been emphasized that the social structure of the classroom is responsible for a good deal of the defensive feelings characteristic of those groups. It has also been pointed out that in defensive climates individuals tend to mistrust and misinterpret communication in the group. It appears that an explanation for the defensive reactions to both types of teacher-initiated humor can be found in the social structure of the classroom. That structure maintains expectations for competition, confrontation, and teacher behaviors which are controlling and evaluative. In such situations, humor is likely to be perceived with suspicion and hostility.

The discussion of the significant relationships identified in this investigation suggests several questions to be addressed by future research. Future research should further identify categories of humor and assess their influence on the classroom communicative climate. The present study was limited to identifying the relationships between tendentious and nontendentious humor and classroom communicative climate. There are numerous other types of humor known to affect perceptions of likability and intelligence (i.e., satire, puns, riddles). With more precise examination of such humor forms, true measurements of their effect might be ascertained.

Audio tapes were used in this study primarily to ensure internal validity of the experiment. Now that there is some indication as to how humor might affect the classroom communicative climate, further research might extend to field study methodologies. Results of this study also suggest the importance of identifying, as clearly as possible, student expectations about a teacher and class and about the use of humor in classrooms prior to determining their perceptions of the classroom climate.

Endnote: For further information about this research, contact Ann L. Darling, Department of Speech Communication, University of Washington, Seattle, WA 98195.

REFERENCES

Adams, J. The use of sexual humor in teaching human sexuality at the university level. *Family Coordinator*, 1973, *23*, 365-368.

Freud, S. *Jokes and their relation to the unconscious*. Trans. and ed. by James Strachey. New York: W.W.Norton, 1960. (Originally published in 1905).

Gibb, J.R. Defensive communication. *Journal of Communication*, 1961, *11*, 332-337.

Gruner, C.R. The effect of humor in dull and interesting informative speeches. *Central States Speech Journal*, 1970, *21*, 160-166.

Hays, E.R. Ego-threatening classroom communication: A factor analysis of student perceptions. *Speech Teacher*, 1970, *19*, 43-48.

Jensen, G. The sociopsychological structure of the instructional group. In *National Society for the Study of Education Yearbook* (Vol. 59). Chicago: University of Chicago Press, 1960.

Kaplan, R.M., and Pascoe, G.C. Humorous lectures and humorous examples: Some effects upon comprehension and retention. *Journal of Educational Psychology*, 1977, *69*, 61-65.

Leak, G.K. Effects of hostility arousal and aggressive humor on catharsis and humor preference. *Journal of Personal and Social Psychology*, 1974, *30*, 736-740.

Martineau, W.H. A model of the social functions of humor. In J.H. Goldstein and P.E.McGhee (Eds.), *The psychology of humor*. New York: Academic Press, 1972.

Rosenfeld, L.B. Communication climate and coping mechanisms in the college classroom. *Communication Education*, 1983, *32*, 167-174.

Smith, R.E., Ascough, J.E., Ettinger, R.F., and Nelson, D.A. Humor, anxiety, and task performance. *Journal of Personality and Social Psychology*, 1971, *19*, 243-246.

Sundell, W. *The operation of confirming and disconfirming verbal behavior in selected teacher-student interactions*. Unpublished doctoral dissertation, University of Denver, 1972.

Tamborini, R., and Zillman, D. College students' perceptions of lectures using humor. *Perceptual and Motor Skills*, 1981, *52*, 427-432.

Townsend, M., and Mahoney, R. Humor and anxiety: Effects on class test performance. *Psychology in the Schools*, 1981, *18*, 228-234.

Wilson, C.P. *Jokes: Form, content, use and function*. New York: Academic Press, 1979.

Ziv, A. Facilitating effects of humor on creativity. *Journal of Educational Psychology*, 1976, *68*, 318-322.

WOMEN PROFESSORS AND LECTURING

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Do women professors help create their own problems? Without question, the problems exist. Published figures (Bernard, 1964; Morlock, 1973; Chronicle, 1981) regularly demonstrate that women, compared to men having the same academic rank, earn substantially lower salaries and receive fewer promotions to positions of higher rank. These well-known career deficits are commonly interpreted as resulting from discrimination in a male-dominated profession. To this day, with little doubt, such discrimination is indeed widespread. Even so, it could also be true that women professors unwittingly contribute to the deficits. This paper offers findings from a nation-wide survey of undergraduate classroom teaching practice on university campuses which suggest that such, indeed, may in fact be the case.

In the spring of 1981, a short questionnaire was mailed to 1,041 individuals, a random sample of all those named in the undergraduate liberal-arts catalogs of 80 top-ranking American universities as teaching undergraduate courses in the physical sciences, natural sciences, social sciences, and humanities. Non-respondents received four follow-up mailings. A total of 820 usable questionnaires, or 79%, were returned. The questionnaire asked about the teaching method or methods respondents had used in the last class they taught prior to answering the questionnaire, the size of that class, their general preference among teaching methods, and such demographic characteristics as their sex, rank, tenure status, and discipline. Listing of respondents' names in the school catalog typically indicated substantial local standing: of the 820, all but 10 were full professors, associate professors, or assistant professors.

Among the 820 a total of 87, or 11%, were women. As is well known, the proportion of women faculty members varies greatly from field to field. Among respondents in the present study, in which the fields sampled represent only the "pure" half of the university professoriate (Biglan, 1973), women comprised 3% of those in the physical sciences (primarily including physics, chemistry and geology), 11% of the life scientists (botany, biology, zoology), 12% of the social scientists (economics, history, political science, psychology, sociology), and 19% in the humanities (art history, literature, philosophy).

This paper explores the possibility that women professors contribute to their own problems because they tend to depart from established standards -- male standards -- for teaching. Nationwide, studies repeatedly indicate, lecturing is far and away the dominant teaching method used for the classroom instruction of undergraduate students. Our survey reconfirmed this result. The questionnaire asked respondents to "think of the most recent class session [they had] held in an undergraduate course and to choose from among several statements the one which came closest to describing that session. Two of the statements, and the percentages of respondents selecting each, were as follows: 7% checked that they had "lectured continuously for most of the period, with no interruptions from students," and 73% said that they had "lectured for most of the period, pausing now and then for student questions or comments." Thus what amounts to hour-long lecturing, typically with brief interruptions for student queries and remarks, characterized 80% (7% plus 73%) of these instructors' most recent classes. On the other statements, 9% had "lectured for part of the period -- say 15-25 minutes -- but had the class do something else (discussion, buzz groups, etc.) before or afterwards," another 3% "gave one or two short explanations or presentations (5-8 minutes) on a course topic, but otherwise had the class do something else," and the remaining 8% said that "none of the foregoing [four statements] describes this class even approximately." It seems safe to assume that these instructors' "most recent" classes, taken together, provide an accurate composite portrayal of their regular manner of conducting classes. For a sample of 820, the sample figure of 80% lies within 3.6% of the true population figure at the .01 confidence level. Thus in approximately four-fifths of the undergraduate classes taught by American university professors in the broad disciplinary spectrum represented by the four fields studied, the class sessions were devoted to hour-long lectures presented by the instructor. This of course means that classroom instruction which included substantial use of any other methods than lecturing was offered in about one out of every five classes.

Again by a one-sided margin, these professors believed they were doing the right thing. Asked to describe "their overall preference for teaching an undergraduate course," 27% said they "much prefer to teach by lecturing than by other methods," 30% "somewhat prefer lecturing," 27% "like lecturing and other methods about equally," 5% "somewhat prefer other methods over lecturing," and 8% "much prefer other methods." (The remaining 3% did not give a codable reply to the question.) In short those who made lecturing their first choice as a general matter outnumbered those who liked other methods better by the one-sided margin of 57% to 13%.

Interestingly, the 820 respondents had given hour-long lectures noticeably more often than their "overall" preferences would predict. This discrepancy deserves a scrutiny that space does not permit here. Nevertheless, and despite the discrepancy, an overriding pattern was clearly evident: in both specific practice and general preference, these professors made lecturing by far their most favored teaching method.

Here lies the rub. Women professors followed neither dominant practice nor dominant belief as often as men did. While 82% of the men gave hour-long lectures, just 67% of the women did so. And while 59% of the men preferred lecturing as a general method, only 41% of the women agreed. The women, in numbers a small minority, considerably more often adopted a minority stance towards the classroom.

Let us now seek to understand these differences, first by showing that they are to some extent artifactual, and then by offering three sets of findings that throw light on their causes. The paper ends by noting some ways that women's teaching stance may have unwanted consequences for those women.

The sizeable overall differences between men and women professors are in part artifactual because professors in the four fields differ in their reliance on lecturing, and the fields with the least lecturing also have the highest proportions of women. Conceivably women's concentration in these fields could account completely for their low rate of lecturing and leave them on an exact par with their male colleagues. It turns out, however, that within each field women gave hour-long lectures less than men. In the life sciences, 82% of the women and 93% of the men lectured in this fashion. Parallel figures for the social sciences were 74% and 81%, and for the humanities 55% and 63%. (The physical sciences had too few women to allow percentaging.) Instead of the overall 15% (82% minus 67%), the difference within fields averages 9%. Though smaller, it is still a real gap.

Three sets of findings offer suggestive leads towards understanding this gap. The first deals with the way general preferences relate to specific practice.

As noted, the men made lecturing both their preference and their practice considerably more often than women. But the link between preference and practice was quite different for the two sexes. Among men who generally preferred to lecture, 93% actually did so; among those who favored lecturing and other methods equally, 75% lectured; and among those who preferred other methods over lecturing, 50% in fact lectured. Not at all surprisingly, men who favored lecturing thus did so a good deal more often than those who favored other methods.

Among the women, 94% of those who preferred lecturing did so, compared to 68% of those who were neutral and 17% of those who preferred other methods. Thus women who preferred lecturing as a general matter lectured in practice fully as often as men with the same preference. For these professors, a gender difference did not exist. But among those who preferred other methods over lecturing, the difference was large indeed. Unlike their male counterparts, women who preferred other methods adhered to their preference almost as consistently as did women who preferred lecturing. Already more likely than the men not to prefer lecturing, they also tied practice far more closely to a non-lecturing preference.

The second set of findings deals with the size of the classes that instructors taught. Women had small classes of fewer than 25 students with much the same frequency (37%) as men (36%), but men had comparatively large classes of at least 40 students noticeably more often (41%) than women (32%). In itself this difference is hardly impressive. But when the frequency of lecturing is also considered, a suggestive pattern emerges. Not at all surprisingly, class size is a correlate of teaching method: the larger the class the more likely an hour-long lecture. This was clearly true for the men, who lectured to 75% of their small classes with fewer than 25 students, to 83% of the intermediate classes with 25 to 39 students, and to 89% of those with larger enrollments. And with a slight irregularity it was also true for the women, whose corresponding figures were 63%, 60%, and 82%.

Regardless of class size, the men consistently lectured more often than the women: by 12% in the small classes, by 23% in the intermediate, and by 7% in the large classes. These percentages can be interpreted as showing that while men professors turned more easily and readily to the lecture as the size of their classes increased, the women were more reluctant to accept lecturing as an appropriate way to teach the intermediate classes, and capitulated only when the size of the class posed major obstacles to the use of other methods. Men may find it easier to justify the idea that sizeable classes warrant lecturing, and in classes that are objectively smaller, than women do.

The third set of findings deals with the respondents' schools. The study collected information on some 112 characteristics of the 80 universities at which the sample of professors taught. Overall, there was no relationship between the instructors' teaching practices and the numerous dimensions of institutional and community environment these indicators tap. Faculties lectured with equal frequency in relatively old and new colleges, in those with large and small libraries (adjusted to a books-per-student basis), with a comparatively large or small budget per student, with a large or small faculty or large or small student body, in a metropolis or in the countryside, with a large or small proportion of students housed in dormitories, with a strong or weak emphasis on intercollegiate sports, et cetera, et cetera. But this overall generalization masks a repeated pattern in which the women teachers adapted their teaching to the nature of their student body and their college, while their male colleagues consistently paid these factors no attention. Or so the findings consistently suggest.

A single example must suffice. When the 80 institutions are divided into those with a comparatively large and comparatively small proportion of students coming from homes in the state where the institution is located -- those above and below the median -- men professors lectured with the same frequency on the campuses with the comparatively local student bodies (81%) as on campuses with comparatively cosmopolitan students (81%). Women lectured almost as much (77%) on the more cosmopolitan campuses, but considerably less (57%) on the more local. Men clearly saw no reason to adjust their teaching methods to the differing origins of their student audiences. But women tended to use quite different teaching approaches for the two kinds of student bodies. Perhaps women professors feel that students, to learn well from lectures, must have a degree of openness to novelty which gives them both the interest and the capacity to comprehend the unfamiliar formulations an expert's academic lecture typically includes. Students who have ventured comparatively far from home may be venturesome in this second sense. Students who stay literally close to home, in contrast, may fare better when the teacher avoids lecturing and instead encourages students to express their own views and opinions, to find suitable illustrations of points from the range of their familiar experience, and so on. We can only guess at the relevant differences between the two types of student bodies. Whatever those differences, the finding suggests that women professors were attuned to them and prepared to adjust their teaching to them in ways that the men were not. And what is important here, the women's adjustment systematically involved turning away from the lecture and towards other instructional approaches.

We have presented several findings, and commented on each. Now we are in a position to venture a more general interpretation which seeks to make sense as a whole of the complete group of findings. It seems clear that the professoriat feels a pressure to lecture in undergraduate classrooms. This pressure is shown (among other ways) in the difference between teachers' specific practice and their general preferences. Among the men, 23% more actually lectured than said they preferred lecturing; among the women 26% more did so. The pressure was thus felt approximately as widely among male professors as female. Where the men differed from the women was in their responses to the pressure. They lectured more, they more often held general beliefs about teaching which were in line with reality exigencies that call for lecturing. And when they held incompatible beliefs, they were more willing to lecture anyway. The women felt the pressure just as much (by our crude measure), but they responded with more resistance to it: they lectured less, they less often made lecturing their general preference, and they far more often stuck to their guns in the classroom when they believed in alternative teaching methods.

A major element in the pressure to lecture is the need to find a suitable method for teaching large classes, with the conclusion often reached that lecturing is the best answer. But women professors were considerably more reluctant than men to see medium-sized classes as "large enough to require lecturing." Again they resisted the pressure more. We have also seen that women appeared willing quite systematically to adjust their methods of teaching to the nature of their institutions' student bodies, and that the adjustment often involved teaching without lecturing; in the same settings the men lectured on, irregardless. Yet again, the women found reason to resist the pressure and the men did not.

The fact remains that, however cogent a woman's reasons may be for choosing not to lecture, lecturing is the professoriat's far-dominant practice. It is also (if by a smaller margin) the professoriat's clear teaching method of choice. Instructors who use other teaching methods may suffer the likely accompaniments of disvalued behavior. For women, real costs may accompany not lecturing.

Only further research can establish or disprove this linkage. Our study did not address it directly. But even if the link should prove clear, the sequence of events which creates the link may not. Which comes first, the career deficits or the deviant teaching practices? It is certainly possible that the reduced career chances precede and affect the teaching. Finding themselves systematically discriminated against in promotions and raises, some women may opt for quiet rebellion against majority teaching patterns in their classrooms. Statistically a minority, treated like a minority, women professors would thus react by displaying some of a minority's apartness of belief and behavior. But the reverse sequence is also certainly possible. Women professors may have a prior inclination not to lecture, with unhappy consequences for the tangible rewards they receive from their departments and their institutions.

The difference between these two causal scenarios is an important one. If women respond to systematic discrimination from the professoriat's male majority with a tendency to disvalue certain majority norms, that would not be news. Research (e.g. Ogbu, 1974) shows that minorities often respond thus to discrimination. The women's movement, even while it has fought for equal pay and fair promotions, has also sought to encourage a separate subculture among women professors.

But the possibility that women themselves contribute to their rank and salary deficits is seldom mentioned. If women professors lecture less than men do, and thus help perpetuate their disadvantaged place in academia, thoughtful consideration of this pattern and its consequences should be useful both to women academics and to the many men of good will among their colleagues.

References

Bernard, Jesse, Academic Women, Pennsylvania State University Press, University Park, 1964.

Biglan, A., "The characteristics of subject matter in different academic areas," Journal of Applied Psychology, 57 (1973), pp. 195-203.

Chronicle of Higher Education, September 30, 1981. (v. 23, #5)

Morlock, Laura, "Discipline variation in the status of academic women," pp. 255-312 in Alice S. Rossi and Ann Calderwood, eds., Academic Women on the Move, Russell Sage, New York, 1973.

Ogbu, John W., The Next Generation, Academic Press, New York, 1974.

THE IMPACT OF LECTURING AND INDIVIDUALISED LEARNING ON STUDENTS' APPROACHES TO LEARNING

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INTRODUCTION

Most research into teaching methods has focused on the effectiveness of the methods in terms of examination results and it has been found that teaching methods do not make any difference when measured by examination results [Dubin and Taveggia, 1968; McKeachie, 1967; Peterson and Walberg, 1979]. There has been little research that looked at teaching methods from the perspectives of students in terms of *what* rather than *how much* they have learned. In my view one should assess outcomes in terms of *what* has been learned (which is qualitative) rather than how much (which is quantitative).

A study that does relate to what students learn is a study by Marton and Säljö [1976]. They found qualitative differences in learning outcome when students learn from the same content, and these qualitative differences in outcome are due to qualitative differences in the level of processing that the students used when they set about their learning. Hence learners may either use a 'surface' or 'deep level' processing when approaching their learning task.

In a recently completed study on lecturing and individualised learning (IL) with a group of teacher trainees in 2 teacher training institutions in Kuala Lumpur, Malaysia it was found that *teaching methods have an effect on the approaches that students adopt in their learning,* i.e. whether they use 'deep' or 'surface' level processing. IL is here used to refer to a teaching method in which students learned from a set of prepared learning materials within which were incorporated activities, assignments and self tests.

This paper outlines the research methodology used and presents some of the findings.

RESEARCH PROCEDURE AND ANALYSIS OF DATA

Two hundred and twenty five teacher trainees were taught a course on 'Objectives and Assessment in the Classroom' using individualised learning materials (ILM). All teacher trainees answered a semi-structured questionnaire and the questions related to aspects of learning from both IL and the lecture e.g. knowledge acquisition, understanding, retention, interest, contact with lecturer and so on. For every question the students were requested to provide reasons or comments for their responses. The closed ended questions were analysed using the Statistical Package for Social Science Program while the open responses in the questionnaire were categorised interactively using independent judges.

Twenty five of these students constituted the case study group and the primary focus in this was to interview the students about their learning strategies from both IL and the lecture. Each of them were interviewed between one hour and one and a half hours and the interviews were transcribed verbatim. The students gave an introspective account of how they had learned from the ILM and having had extensive experience with the lecture, they were, therefore, able to also describe their learning strategies in the lecture situation.

LECTURER-ORIENTED LEARNING (LOL) vs SELF-ORIENTED LEARNING (SOL)

A quantitative analysis of the questions produced two main distinct groups of students: those whose responses were in favour of IL and those whose responses were in favour of the lecture. Both groups perceived that their understanding was better in the method of their choice. However, an analysis of the open responses pointed to differences in the students' conception of 'understanding', i.e. the groups tended to interpret the term or concept 'understanding' differently.

The students who favoured the lecture conceived their understanding as being very *lecturer-related*. The lecturer's explanation was frequently given as a reason for their better understanding as is illustrated by the following quotation:

> *This is due to the fact that during lectures you've got to listen and pay careful attention to what the lecturer says. This enables you to grasp the subject matter and thus retaining it better. Whereas in IL you've to read the modules yourself and sometimes whatever you read may not interest you. So you may just not read it at all or just skim through without understanding the subject matter.*
>
> *(11 16 4 2)*

In IL 'understanding' was associated with the students' concern for more time and opportunity to 'think' and do things to and for themselves. The following quotation is an illustration of this:

> *...IL allows the person to reflect and meditate deeper into what the module is trying to convey. As such, on most occasions, we can understand the subject matter better in IL.*
>
> *(09 11 2 1)*

The response to all the questions in the questionnaire were mainly characterised by these two types of responses. (A small minority indicated no preference for either teaching method). This led me to suggest that students learning from the lecture and IL adopt different orientations to their learning: *lecturer-oriented learning* students or learners (LOL), or *self-oriented learning* students or learners (SOL).

This dichotomous labelling of students should not be considered as an absolute bipolar characterisation. Neither could they be used to describe every student in the lecture or IL situations. There appear to be other circumstances within the two teaching situations in which a student may either be a LOL or a SOL student. Analysis of the verbatim transcripts of interviews in the case study supported this.

It was found that in the lecture situation the student may either be a LOL or a SOL depending also on other factors operating in the teaching and learning milieu such as the educational system and the student's own motivation. Nonetheless, there was evidence that in the lecture, the students who were SOL tended to become LOL students. In IL, the SOL students appear to find the opportunity for self-assertion in their learning. They, therefore, tended to react positively towards IL. Similarly, some students who normally were LOL students in the lecture situation tended to adopt a SOL approach in IL, but in their case they were somewhat wary and decided that it was a case of getting used to what they considered a 'new' experience. A minority of LOL students remained LOL students in the IL situation. Thus it would seem, from the study, that teaching methods can affect learning approaches.

LOL AND SOL AND THEIR RELATIONSHIPS TO 'DEEP' AND 'SURFACE' PROCESSING

A closer examination of the transcripts of the LOL and SOL students suggested that the LOL students tended to use 'surface' level processing whether in IL or the lecture. The SOL students may use either 'deep' or 'surface' level processing. In the lecture situation when the SOL students turned LOL they also tended to use surface-level processing in order to get by in exams. In IL the SOL students appear to use deep level processing, whilst the LOL students who turned SOL may or may not use deep level processing.

A description of some examples of the LOL and SOL students may serve to illustrate the points I have made.

Student 17 is an example of a LOL student who used 'surface' level processing in both the lecture and IL. This student did not see the need to do well in his institution but he realised the importance of passing exams.

STUDENT 17 (LOL)

> *Actually we don't need to do so well. Some people say even if you have a C or you have an A, still the same pay. Because you do this (IL) now even if you don't understand when time comes for exams since everything is exam orientated then we will really start studying.*

He reflected a *LOL approach* using 'surface level' in learning in the *context of both teaching methods.*

IN THE LECTURE

I : *Tell me something about how you learn through the lectures.*

S17 : *Same as module also in one sense the straying of the mind. I just listen and the lecturer will be thinking that I'm really listening sometimes I mean distraction.*

I : *Do you feel this is an extra burden?*

S17 : *Yes, because its new. We're not used to it. Lectures in the timetable have been allotted so we go and sit there, you listen take down notes, you go check the notes somewhere, wait until exams'.*

IN IL

S17 : *I just read through and then the activities I just do but I don't put stress, lazy.*

I : *Is it just for this that you...?*

S17 : *If I can do it faster, I'll do it faster...I don't think I've much patience...I just go once through. When I'm reading there's one problem when I'm reading my mind goes out somewhere. I don't read thoroughly. I don't grasp what I read. Even if I think of something else I just keep reading there's a problem so when it comes to the activity and then I cannot understand that time I go back. I just go back, see through and try and connect and do the activity.*

This student displayed an indifferent attitude towards his learning, although he was concerned about passing examinations with as little effort as possible. He appeared to be very lecturer-oriented and in both IL and the lecture modes tended to use 'surface' approach to his learning.

Student 12 is an example of a LOL student in the lecture situation who tended to use a SOL approach in IL but still had to get used to the new method.

STUDENT 12

S12 : *...I'm very frank on what I wrote on my general comment. I feel that the first three A, B, and C I wasn't really keen at all....I feel that it's so boring...then there's so little explanation for us...but then I was telling myself until the third C I tell myself I must really do something about it. If I keep on having those type of attitudes it will get me nowhere...Some of my friends they're so interested some are really interested. I was telling myself if they're interested, there must be really something that the've learned...there's really something lacking in me...always tend to dread when I come to modules. So I want back then, I took all out again A, B and C...then I tell myself I must really read and follow the stages. So after that day I sort of get keen....*

When asked how she approached her studying in the two teaching methods she said that in IL:

S12 : *...let's say for instance last time like after lectures I just put away my lecture notes chuck it aside...this way (IL) is very systematic... you ask yourself whether you really understand before you go to do the assignment...there'll be activities here...it helps a lot.*

Of the lecture she said:

S12 : *I think it's totally different: for lectures we understand at that spot usually if you've really paying full attention...then copying down lectures, the minutes after that when you look through the notes you can remember well...whereas for this one you're on your own doing the modules and you've to read and reread before you can really proceed to the assignment...it (IL) really needs full concentration.*

In the final analysis she felt she understood better in lectures because she found them more interesting.

> *S12 : Some lecturers they're very good. They can really give, really explain well and you can remember the kind of gestures they make. So I really can absorb the fact.*

but she also felt inclined to suggest that:

> *S12 : I'm getting quite interested in this IL.*

Student 10 demonstrates characteristics of a SOL student but in the lecture tended to be a LOL and use 'surface' level processing. In IL, she found the opportunity to be involved personally in her learning and perceived advantages in that kind of learning.

STUDENT 10 (SOL)

> *S10 : I find it sort of makes me conscious of my work, let's say when I read the study guide I know that I have to read them through, I can't bluff off the answers because if I don't read I cannot write anything you see. I mean no point looking at the answers at the back, it doesn't help me so I really have to go through every word you know from the study guide from the overview to the end to find out. But I can tell when I came here I haven't been in the library many times...I was very interested in literature work and sometimes the classmates they don't share the same things as you. When you find that you like this poetry so beautiful you want to share with a friend and then you want to tell or discuss they don't share the same with you...you find you can't talk if you open your mouth they say you are bragging...I mean you dare not get so high".*

She went on to describe her learning from IL which suggests a 'deep level' approach.

S10 : Sometimes when I was doing my reading I mean like after a day of heavy work, I just read and read I just simply read you know as long as I turned the pages but then when I come to do the question I find that I don't understand and then I know I've been dreaming away. I have not been fully paying attention to what I read, I didn't understand then so I have to make an effort to turn back from where I missed and then read again then understand, then only I can attempt the questions.

I : How do you feel about the expectations the method puts on you?

S10 : I find that this is very individualised because it depends on how well you understand the thing.

I : When you say understand what do you mean by the word understand?

S10 : Like how well you read this thing you know, what it expects from you what it demands from you like answering a question, what it demands from you exactly I mean I could also answer questions, anybody can answer but then in the answer also there are very good answers and just average answers or some good short answers when I read this I know that it's really my own effort whatever I write down, what I understand and then I can answer the question I meet the demand of the question then I find there is success.

I : How did you go about reading your materials?

S10 : Look through the whole thing then I find as I read through...some paragraphs are so clear. Then I just put a mark there because I know I have to comment on it later but usually my understanding is quite poor at first reading just go through to warm up. I find that certain passages quite difficult. I don't worry about that because it was first reading. I break it in parts...I mean really read intensively.

In the lecture, on the other hand, she tended to use 'surface level' learning as the following quotes demonstrate.

> S10 : *We just take notes down and then I mean we seldom have a test, it is very rare you know, so we don't really read the lecture notes.*
>
> I : *What do you do with the lecture notes?*
>
> S10 : *In fact after copying we just keep it until well the lecturer says OK I'm going to give a test. So we must pick up and read otherwise we just keep it until the main exam or we get assignment...lecture notes... I don't think I read them so thoroughly even if we have assignment on that.*
>
> I : *When you are given assignment what do you do?*
>
> S10 : *Usually we don't really refer to our notes.*
>
> I : *So what do you do?*
>
> S10 : *I may look up the books because probably the question is a difficult one and I find that whatever I take in the lecture it is not sufficient. On the other hand, I might not look up if I know I've got a rough idea I got during the lecture those words which I didn't take down but I understand them and then I could just apply just do a simple one.*

It would appear as the following quote indicates, that in the lecture situation students tended to feel that they had a good grasp of the subject matter but this was not the case. Student 10 made this observation about her understanding in IL. This indicates that a 'deep level' learning process was taking place in IL for this student.

> I : *Before you were doing this, what was your understanding at that time before you did the module?*

> S10 : *I felt that I understood what he (the lecturer) said but I didn't realise how much I didn't understand. Here because you really do the components break it up, I find that whatever I was doing for first module this thing I said very true and then I find myself, I mean understand deeply, more deep, more detailed. Then you realise that whatever the lecturer said sometimes you just take as a passing statement you know.*

The students' comments also suggested that she carried out minimal private reading for the purpose of completing her assignments. However, she felt that at times it was possible to do a 'simple' assignment from what she can gather from her understanding of the lecture.

IMPLICATIONS FOR TEACHING AND LEARNING

The fact that students seem to adopt different learning orientations in different teaching methods has implications for teaching.

1 The present study examined two distinct teaching methods in terms of student approaches to learning - and concluded that no one method is suited to all students. The issue then becomes how can a teaching and learning situation be engineered to orientate students to learn in a way which can promote learning for meaning and which can, as far as possible, cater for the differences in student learning approaches and study methods in order to promote effective learning for the majority.

2 In the two different teaching contexts students' perceptions of what was expected of them differed. They approached their study differently as a result. In IL, the students showed an inclination to work independently, putting more self-effort and attention into their work and using 'deep level processing'. In IL, students may be seen to assume greater responsibility for their own learning shifting, as it were, from 'other directed' to 'self directed' learning. It appears that in IL the SOL students tended to use a 'deep' approach to learning by abstracting meanings. They were not learning for mere reproduction of facts.

3 The SOL students have also indicated a sense of responsibility towards their own learning, however in the lecture situation the teaching milieu (which they described as authoritarian and examination oriented) had induced them to become LOL students using 'surface' level approach merely for playing the examination game. Individualised learning, on the other hand, presented a learning context in which the SOL students' latent feeling of responsibility became reinforced. Hence the easy shift in their conceptualisation of learning and adaptation to new and more challenging teaching and learning situations.

4 In the lecture there is a greater tendency for students to overly rely on the lecturers, thus developing a lecturer-oriented learning (LOL). The indication is that some LOL students may tend to become SOL students in IL but it is not clear whether they then use 'deep' or 'surface' approach learning. The findings suggest that they may use what Säljö [1979] suggests as a 'deep passive' approach which may be associated with the students' difficulty to move fully to a 'deep' approach in a new learning context. While it is possible for these students to adopt a 'deep passive' approach, they may fail to reach 'deep active' level because of the lack of attention and effort. It was as Säljö suggests, easier to induce 'surface' learning than 'deep' learning. These LOL→SOL students may in IL be induced to shift their conceptualisation of learning as a result of experience and perception of the demands of the task, within the teaching and learning context of IL.

5 Perry [1970] suggested a change in conceptualisation of learning as a result of intellectual development as a consequence of time. It may be suggested as Säljö [1979] implies, that a change in the students' conceptualisation of learning can also occur as a result of direct experience and perceptions of the learning tasks irres-

pective of chronological implications. It may be desirable to 'manipulate' the teaching and learning contexts to provide for that experience so that the students can change their conceptions of learning and, consequently, study approach and study methods and habits.

CONCLUSION

This study has highlighted the existence of LOL and SOL student approaches to their study and has drawn attention to the possibility that teaching methods can affect learning approaches. However, in any teaching and learning context, there is bound to be a group of students who are very 'set' in their orientations. These are LOL students who remain LOL students whatever the teaching strategies used. Some of these students have been identified in the study as those students who were averse to IL and who preferred the lecture because it was 'easier to just listen'.

In teaching, individual differences have to be catered for. The lecture treats all students alike when they are different [Elton, 1979; Entwistle, 1981]. IL tries to cater for individual differences in the sense of enabling students to work at their own speed within limits, because students vary in terms of their rate of reading, understanding and assimilation of facts. However, although IL may be a more effective way of communicating with students, it is not effective to meet the personal liking of every student.

REFERENCES

DUBIN, R.and Taveggia, T.C. [1968], The teaching-learning paradox: a comparative analysis of college teaching methods, University of Oregon Press.

ELTON, L.R.B. [1979], Improvement of teaching methods and student participation, paper presented at an International Seminar on Higher Education, Keimyung University, South Korea.

ENTWISTLE, N.J. [1981], Styles of learning and teaching: an integrated outline of educational psychology for students, teachers and lecturers, N.Y., Wiley.

MARTON, F. and SALJO, R. [1976], On qualitative differences in learning: I - outcome and process", British Journal of Educational Psychology 46, pp.4-11.

Mc KEACHIE, W.J. [1967], Research on teaching at the college and university level, in N.I. Gage [ed.]: Handbook of research on teaching, Chicago, Rand McNally.

PERRY, W.G. [1970], Forms of intellectual and ethical development in the college years: a scheme, New York, Holt, Rinehart and Winston.

PETERSON, P.L. and WALBERG, H.J. [eds.][1979], Research on teaching, concepts, findings and implications, Berkeley [Cal.], McCutchan.

SALJÖ, R. [1979], Learning about learning, Higher Education, 8, pp.443-451.

ROHANA ZUBIR [1983], The impact of individualised learning and lecturing on student learning in a Malaysian context: perspectives of lecturers and students, a doctoral dissertation, University of Surrey, England.

EXPERIENTIAL LEARNING PROGRAMS

SATURDAY, 7 JULY

1100 - 1230

EXPERIENTIAL LEARNING IN THE ACADEMIC STUDY OF PUBLIC ADMINISTRATION

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There are three reasons for using experiential learning strategies (ELS)[1] in the teaching/learning of public administration. The focus of this discussion is on the student as a learner.[2] This term will be used to describe students in Master of Public Administration (MPA) programs. The _first_ reason for using ELS with learners stems from the guidelines of the National Association of Schools of Public Affairs and Administration (NASPAA).[3] The Association states that the development of professional managerial competencies, as opposed to the liberal arts focus, is the most significant element for the MPA level study of public administration/affairs. ELS are the best if not the only way to develop behavioral competencies.[4] The _second_ reason for using ELS is reliance on expert opinion. Some leading researchers and most experienced practitioners, such as education and training directors, conclude that the best strategies for developing manager's behavioral competencies are through the use of ELS. They believe that the use of ELS motivate and involve learners, develop planning diagnostic, decision making, and other managerial problem solving skills, focus learner's attention on the human and structural interrelationships in complex situations, enhance learner self discovery, and facilitate transfer from academic to 'real world' settings.[5] The _third_ reason for using ELS relies on the belief that they will reduce serious problems arising because universities treat students as children rather than adult learners. ELS would alter such approaches thus facilitating transfer of learningfrom the academic setting to the places of practice in public management.[6]

ELS defined

Experiential learning, in any form, "... involves becoming awareof the qualities, patterns and consequences of one's own experience as one experiences it."[7] A partial list of ELS would include: brainstorming, case analysis, the clinic, guided designs, modeling, role playing, simulation, laboratory training, gaming, confrontation meetings, force-field analysis, the incident process, in-basket exercises, job coaching and counseling, work-study arrangements, and internship. Another way to define ELS would be to include any learning/teaching method, aid device or material which directly involves the learner with:

1. immediately relevant, concrete and administratively oriented materials. This exposure leads to a close approximation of learning by doing;

2. a structured and focused time period to reflect (by one's self or within a learning group) about the quality, meaning and consequences (personal and organizational/situational) of these experiences. Sharing these observations, reactions, and beliefs, following this reflection.

3. developing alternative action plans to test this comprehension by engaging in further concrete experiences. This usually involves changed learner behavior to facilitate problem solving or at least planning for such change.

4. discussing the patterns and dynamics discovered about these experiences for the purpose of additional planning and action.

5. abstracting, generalizing and then transferring these reflections and reactions (now turned into an understanding of 'the world' based on personal experience) to real-world, real-time applications to the practice of public management. This means planning to try out, or trying out, one or more of thealternative applications discovered and discussed in previous stages of the experience.

This definition/description of ELS permits further discussion of the three reasons for using ELS.

The NASPAA guidelines

The question arises, How do ELS characteristics relate to NASPAA goals in the MPA program? A content analysis was completed. This shows that the development of more than 85% of the Guideline's 93 statements of managerial competence(Knowledge, skill, values, behavior) involve ELS. This was expected since both NASPAA and the American Society for Public

Administration (ASPA) place priority on the education and training of in-career students. Since many of the MPA students are working as managers[6] action oriented, rather than theoretical competence would be expected.

The author found that 75% of the statements of competence in the NASPAA guidelines could best be achieved through the application of ELS. The NASPAA guidelines were compacted and synthesised to eliminate duplication and parallel statements were extracted as they repeated themes displayed in the literature describing ELS. In this way behavioral statements were developed from NASPAA's antecedent statements of job knowledge, attitudes and values, and skills. The behavioral statements and statements about role performance of managers were almost identical. Such statements closely matched those developed by researchers and training directors when describing process and outcome behaviors of learners using ELS to solve managerial problems in educational or training settings. Expert opinion thus reinforced the content analysis.

Expert opinion

Research findings about ELS are spotty in coverage and uncertain statistically[7] Specific single ELS have been studied more frequently but most studies make unfair comparisons with non-experiential approaches, use few or no before and after measures, or do not have control groups. ELS research thus leaves much to be desired.[8] It may be almost impossible to conduct sound research in this area since it is very difficult to control for variables other than the teaching method. These conditions include the teachers involved, type of subject, educational objectives, and type of students.[9] Some researchers do however find positive results when using ELS in contrast to other strategies.[10]

Most training directors have more consistent andpositive opinions about ELS. They have observed that ELS have persistent positive effects on learner motivation, productivity and growth. Despite the influence of the 'training(Hawthorne) effect' these practitioners repeatedly support the use of ELS in management education.[11] There is a consensus that manager-trainees find ELS to help bridge the gap between the training site and worksite.

Transfer to management practice

MPA students are adults. They can be expected to learn better if they are treated as adults. We expect children but not managers to be dependent, lacking in self-confidence, and indecisive. Didactic strategies place MPA students in such postures. Graduates exposed to learning which applies such expectations transfer such attitudes and 'sets' to their practice of management. Didactic learning presupposes the constructs of pedagoagy (the education of children). ELS adopts the views of andragogy. Andragogy assumes that the process and content of the adult learning experience must involve in the learner a developing self-direction which is integrated into the learner's reservoir of experiences, use of such experience as a learning/teaching resource, orientation to the integrative and developmental tasks involved in the learner's social roles, shift from subject/content centeredness to problem/process centeredness, shift from reliance on instructor oriented class structure and method toself-reliance in these areas, and orientation to learning as a lifelong process of discovering what is not known from an orientation which focused on rehearsal in transitional roles where learning meant absorbing transmission of the existing body of knowledge.[12]

For these three reasons, the NASPAA guidelines, expert opinion, and improved transfer of training, ELS are proposed as optimal for the education of MPA students and managers generally. While ELS may well be the wave of the future in course or curriculum design, MPA programs are not so situated that this change from didactic to ELS can or will occur quickly.

Toward the use of ELS

If the movement from didactic to ELS is to be balanced and successful, the university environment, the nature of the MPA student/learner, and the nature of the faculty must be considered. Each university has its own culture and traditions. Norms, rules and values regarding curriculum design, student-faculty relationships, course scheduling, time constraints and shortages, limitations of resources or facilities, unfamiliarity with ELS, all have significant bearing on university actions to adopt ELS in a balanced manner.

The large size of classes, the heterogeneity of the student body, its immaturity, lack of managerial experience, lack of student/faculty responsibility and interest, complexity of what is to be learned, general student/faculty skill deficits with applying ELS, and their disinterest in using ELS may be realistic or practical constraints on the adoption of ELS rather than didactic strategies. On the other hand they may be rationalizations for resistance to creative innovation through the use of ELS. Faculty skills with ELS are also conditioned by their attitude toward these strategies.

Faculty adaptation of ELS will vary with the degree of confidence or comfort level when engaged in the more participative and leveling modes of such strategies. The speed with which such skills are acquired will depend on university culture, student characteristics, course content and objectives, faculty characteristics, and time tables established in some consultative climate by the university/student/faculty. The interactive mix which occurs in such consultation will determine how much risk is taken to shift comfort levels. Faculty motivation for a balancing of learning strategies is the single overwhelming consideration. Faculty belief regarding the nature of the learning process is the underlying factor. Should faculty believe that learning occurs best for MPA students through traditional approaches, ELS will be ignored.[13]

Criteria and aids for balancing strategies

Bell and Margolis[14] suggest three criteria when choosing Didactic or ELS.

> Utility (1) definition of the planned behavioral goal (2) whether use will be uniform or flexible (3) whether use will be one or many times (4) whether the learner will be required to retain what is learned for a short or long duration.
>
> Nature of the Learning (1) degree of dissonance experienced by in the learning (2) degree to which variance with learner's self/world image, or value structure arises.
>
> Degree of unlearning or basic alteration - distinguishing whether the act of learning requires simple addition, complex addition, or alteration.

Faculty deciding on the mix of didactic and ELS should ideally select ELS when: the behavioral learning objective requires the learner to use the learning flexibly, frequently, by altering its application,remain able to think directly in terms of the learning, and retain the learning for a long period of time; when the learning is discocertive or confusing to the learner, is at variance with the learner's self image or value structure; when learning occurs through learner insight or self-discovery; when learning involves a spirited learner-learning relationship; when the learning involves something completely new, foreign, and significantly different from the learner's existing gestalts; and when the learner must unlearn things previously learned.

In an effort to assist those with an interest in moving the traditional Masters level curriculum design toward the ELS in gradual balanced steps a matrix has been developed and is presented. The factors set in opposition on this matrix are not always clearly antagonistic or dichotomous, but learning strategies can be scaled (in ELS terms) with its use.

Matrix elements

"Y" axis: (1) level of risk (RI); (2) level of teacher structure and control (SC)

"X" axis: (1) level of reality (RE); (2) level of opportunity for learner self-realization and growth (SD)

Values assigned on the axes

Level:	low	medium	high
(RI)	2	3	1
(SC)	4	2	0
(RE)	0	2	5
(SD)	0	1	4

All elements must be scored when selecting specific learning strategies. Scores are added to assess the degree to which the strategy in question approximates ELS ideals. Maximum scores are shown below.

Matrix for selecting learning strategies[15]

(RI/SC)	Low	Med	High
Low	6	9	15
Med	5	8	14
High	1	3	10

(RE/SD)

This matrix is only a rough tool, more specific design considerations are recommended once the choice of ELS is determined. We need to account for a wide variety of student learning experiences, to provide a change of pace and to include both (1) intensive concentration on a small segment of a complex field (intended to prepare entry level managers to grasp the detailed techniques needed for daily functioning) and (2) a broad perspective to see where individual tasks/elements relate to administrative behavior.[16]

Broader considerations of curriculum design should involve intra or intergroup faculty meetings and conferences. These faculty groups should work with students to achieve a balanced curriculum. This curriculum should be sequenced so larger numbers of course objectives, courses, program tracks and concentrations could incorporate ELS. ELS provide greater opportunity for rapid learner growth, self-discovery, and application to fields of practice. Managers so prepared would be led to the assumption of real world risks in planning,deciding, and evaluating. These are functions which characterize professional management competencies. Professional meetings devoted to the area of improving university teaching (for example this one) should discuss the role of ELS. Students should be included in such discussions.

NOTES

1. Bell, C.R. 1977. "Criteria for selecting instructional strategies." Training & Development Journal (TDJ) 31(10):3; Fisher, F.E. 1973. "Give a damn about continuing education in public administration." Public Administration Review (PAR) 36(3):488; Torbert, W. 1973. Learning from Experience. N.Y.: Columbia Univ. Press, p.39; Bell states that strategies are methods, techniques, aids or devices used to facilitate the achievement of one or more learning objectives. He further suggests that they should be synergistically applied for this purpose.

2. Knowles, M. 1970. The Modern Practice of Adult Education. N.Y.: Association Press, pp. 38-39; Rogers, C. 1969. Freedom to Learn. Columbus, OH: C.E. Merrill Pub. Co.

3. National Association of Schools of Public Affairs & Administration. 1974. Guidelines and Standards for Professional Masters Degree Programs in Public Affairs/Public Administration. Washington, DC: NASPAA, pp. 4-5.

4. Bell, C.R., op. cit., pp. 5-6; Bell, C.R. & F.H. Margolis, "Blending didactic and experiential learning methods." TDJ. 32(8):16-21; Blake, R.R. & J.S. Mouton. 1968. "Work team development." Training in Business & Industry, 5(6):33; Blake & Mouton. 1979. "OD technology for the future." TDJ. 33(11):55,59,64; Hill, N.C. 1977. "Increasing managerial effectiveness." TDJ. 31(7):16,18,19; Hinrichs, J.R. 1975. "A feedback program to make manager development happen." Personnel Journal. 54(Sep):478-481; Kolb, D.A. 1974. Building a Learning Community. Washington DC: National Training & Development Service; Parry, S.B. 1980. "The name of the game is simulation." TDJ. 34(6):99,100,104; Pfeiffer, J.W. & J.E. Jones. 1969- . A Handbook of Structured Experiences for Human Relations Training.(Annual) Iowa City: University Associates Press; Siegel, G.B. 1977. "Gaming simulation in the teaching of public personnel administration." Public Personnel Management. 6(4):236-239; Simile II, Center for Simulation Studies, 730 De Mun, St. Louis, MO 63105; This, L.E. 1980. "Results oriented training designs." TDJ. 34(6):15,22; Wilborn, D.M. & V.H. Davis. 1977. "Fitting academic preparation to practice in urban management." Praxis. 2(2):1; Zoll, A. III. 1969. Dynamic Management Education, 2d Ed. Reading MA: Addison-Wesley.

5. Blake & Mouton. 1979. op. cit. p. 64; Fisher, op. cit.; Fletcher, T. W. ed. 1973. "A symposium, continuing education for public ministation. Introductory comments." PAR. 33(6):488; Gregg, R.G. & Van Maanen. 1973. "The realities of education as a prescription for organizational change." PAR. 36(3):522; Hill, op. cit.; Kolb, op. cit. Thompson, F.J. 1978. "Is university training'practical'? Perspectives of public personnel officials." PAR. 38(1):82-83; Ulrich, F.A. 1977. "Management development where universitieshave gone wrong." TDJ. 31(9):36.

6. Blake & Mouton. 1979. op. cit. p.64; Hinrichs, op. cit.; Knowles. op. cit.; Ulrich, op. cit.

7. Torbert, op. cit.

8. Byham, W.C., D. Adams & A. Kiggens. 1976. "Transfer of modeling training to the job." Personnel Psychology. 29:345; Carroll, S.J. F.T. Paine & J.J. Ivancavich. 1972. "Therelative effectiveness of training methods: Expert opinion and research." Personnel Psychology. 25:495; Dill, W.R. 1961. "What management games do best." Business Horizons, Fall; Golembiewski, R.T. & S.B. Carrigan. 1973. "Planned change through laboratory methods: toward building organizations to order." TDJ. 27(3):18; Guyot, J.F. 1977. "How do we know which training is good for managers?" PAR.37(6):698; Hakel, M.D. 1976. "Some questions and comments about applied learning." Personnel Psychol-

ogy. 29:36; Kidron, A.G. 1977. "The effectiveness of experiential methods in training and education: The case of role playing." *Academy of Management Review*. 2(3):493-494; Schriesheim, J.F. & C.A. Schriesheim. 1974. "The effectiveness of business games in management training." *TDJ*. 28(5):14; Schriesheim, C.A. & J.F. Yaney. 1975 "The motivation of business game participants." *TDJ*. 31(10):3; Siegel, *op. cit*.

9. Kelley, L. & G. Easton. "Evaluation of experiential learning in management education." *Journal of Experiential Learning and Simulation*. 2(4):213-222.

10. Carroll, Paine & Ivancevich, *op. cit*.; Golembiewski & Carrigan, *op. cit*.; Guyot, *op. cit*.; Hakel, *op. cit*.; Janis, I.L. & B.T. King. "The influence of role playing on opinion change." *Journal of Abnormal Social Psychology*. 49:211 (1954); King & Janis, 1956. "Comparison of the effectiveness of improvised versus non-improvised role playing in producing opinion changes." *Human Relations*. 9:177; Siegel, *op. cit*., p. 237.

11. Guyot, *op. cit*.; Schriesheim & Schriesheim, *op. cit*.; Siegel, *op. cit*.

12. Jones, *op. cit*.; Pfeiffer & Jones, *op. cit*. Kolb, *op. cit*.; Knowles, *op. cit*.; Rogers, *op. cit*.; Siegel, *op. cit*.

13. Bell & Margolis, *op. cit*.; Siegel, *op. cit*.; Simile II, *op. cit*.

14. Bell & Margolis, *op. cit*., pp. 17-21.

15. Buzzotta, V.R., R.E. Lifton, & M. Sherberg. 1977."Coaching and counseling: How you can improve the way it is done." *TDJ*. 31(11): 50; Hill, *op. cit*.; Siegel, *op. cit*.

16. Bell, *op. cit*.; Bell & Margolis, *op. Cit*.; Blake & Mouton, 1978, 1979, *op. cit*.; Boyd, B.B. 1980. "Developing case studies." *TDJ*. 43(6):113; Buzzotta, Lifton & Sherberg, *op. cit*.; Donovan, J.L. 1975. "An approach to case studies." *TDJ*. 29(3):13; Duke, R.D. 1974 *Gaming: The Future's Language*. N.Y.: Sage Pub., Halstead Press, Wiley; Engel, H.M. 1973. *Handbook of Creative Learning Experiences*. Houston: Gulf Pub.; Golembiewski, R.T. & A. Blumberg. 1980. "training and relational learning: the confrontation design." *TDJ*. 34(6): 70; Golembiewski & Carrigan, op. cit.; Golembiewski & A. Kiepper. 1976. "MARTA: Toward an effective open giant.", Chapter 18 in R.T. Golembiewski, F. Gibson & G.Y. Cornog. *Public Administration*, p. 296, Chicago: Rand McNally College Pub.; Hill, *op. cit*.; Hinrichs, *op. cit*.; Jones, *op. cit*.; Kolb, *op. cit*.; Mahler, W.R. & H.A. McLean. 1980. "Developmental Dialogues." *TDJ*. 34(6):126; McCurdy, H.E. 1972. "Fiction, role-playing, simulation and games: Toward methodological innovation in administrative theory." Mimeographed, prepared for presentation at the National Conference on Public Administration, N.Y., March 23; Newstrom, J.W. 1975. "Selecting training methodologies." *TDJ*. 29(10):12; Parry, *op. cit*.; Pfeiffer & Jones, *op. cit*.; Siegel, *op. cit*.; Simile II, *op. cit*.; This, L.E. 1980. "Results-oriented training designs." *TDJ*. 34(6):14.

QUESTIONS FOR ADMINISTRATORS OF EXPERIENTIAL LEARNING PROGRAMS

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Programs designed to provide students with college-level academic credit for learning they have acquired through life experiences are not uncommon in the United States, although they are still considered nontraditional. As the student population grows older -- because there are in the general population fewer people of traditional college age, and because increasing numbers of adults are returning to college to begin, complete, or supplement their education -- the number of such nontraditional programs is increasing. It is not only in the United States that such a trend exists. Recently, postsecondary institutions in the U.K. and in Norway have sent representatives to The University of Maryland University College to learn about EXCEL, the experiential learning program that has existed there since 1978. While both the credit yield and the number of EXCEL students are small compared to the total University College student population, the fact that for any given student EXCEL may provide the equivalent of one-fourth of a baccalaureate degree (30 semester hours credit) requires that close attention be paid to the academic rigor of the program.

EXCEL, like most other programs for the assessment of prior experiential learning in the United States, is a member of the Council for the Advancement of Experiential Learning (CAEL) and follows many of CAEL's guidelines. Still, each such program is of necessity as individual as the institution that houses it and must conform to the degree program of which it is a part. So EXCEL's administrators have given careful thought to the philosophies underlying their program and to the means for administering it with both academic rigor and fiscal viability. Whilst our solutions may not prove workable in all institutional settings, we present the questions from which they arose as worthy of consideration by others who are implementing programs for the assessment of prior experiential learning.

EXCEL's Assumptions About Prior Learning

1. Adult students have had a variety of life experiences.

2. Those life experiences can (but do not always) result in learning that is equivalent to college-level learning. NOTE: College-level learning (a) is at the collegiate level, as defined by faculty experts, (b) has a theoretical, not solely a practical, basis, and (c) is generalizable, that is, can be applied outside the specific context in which it was gained.

3. Within reasonable limits, such learning has an appropriate place in a college curriculum.

4. Some (not all) students can articulate and document the college-level learing they have gained through their life experiences.

5. Their learning, NOT their experiences, can be reliably assessed to determine whether or not credit can appropriately be awarded.

Principles Underlying the Administration of EXCEL

*Maintaining the academic integrity and credibility of EXCEL is paramount.

*To cheapen the value of one student's degree would be to cheapen the value of every degree conferred by University College.

*EXCEL is not for everyone: Prospective students must be carefully screened on the basis of objective criteria.

*Admission to EXCEL does not guarantee an award of credit.

*Guidance is necessary to enable a student to produce a creditable portfolio. (For EXCEL students, this guidance is provided by a three-credit portfolio-preparation seminar.)

*Delineation and documentation of learning go hand in hand; both are essential to the effective evaluation of experiential learning.

*Evaluation of students' portfolios must be left in the hands of the faculty -- BUT faculty evaluators must receive special training and orientation to experiential learning.

*EXCEL can award credit only in academic areas for which the University can provide competent faculty evaluators.

*Duplicate credit must never be awarded for the same learning.

*Because experiential learning represents knowledge acquired outside University College, it is considered transfer (rather than residential) credit.

*The EXCEL program must be self-supporting, not profit-making.

*EXCEL does not "sell" credits, it awards them, on the basis of stringent criteria.

The assumptions and principles listed above, because they are congruent with the goals of University College, have provided EXCEL with a solid basis on which to operate. Even so, a number of perplexing questions have arisen during the past few years.

The Evaluation Process

The fundamental questions about evaluation of prior experiential learning, underlying all others, are these:

1. How can administrators and faculty evaluators ascertain that a student's portfolio truly substantiates college-level learning? After all, everyone has experiences but not everyone learns from them. And of the learning that does occur, very little is at the college level.

2. How can one avoid interpreting documentation (that an experience did occur) as evidence that learning also occurred?

For these questions, we have no ready answer. The level of a student's learning in ordinary classes is presumably indicated by the course designator, and if the student performs at a satisfactory level then we assume s/he is learning at the designated level. For ordinary classes, we also assume --

sometimes erroneously) -- that successful completion of required coursework means that learning has occurred. Thus, since our faculty evaluators bring with them to the portfolio-evaluation process their classroom experiences, we expect them to apply those experiences appropriately.

Other questions concerned with portfolio evaluation relate more to logistics than to philosophy:

3. When a faculty evaluator recommends the award of upper-level credit,

a. Can it be assumed that the student has mastered all (or any) prerequisite lower-level learning?

b. Should credit then be awarded for relevant lower-level learning, even though it has not been specifically described or documented in the portfolio?

Our answer is no. We believe that the portfolio should stand alone, a complete entity, and that evaluators should neither read between the lines nor make assumptions about what the student may know beyond the bounds of the portfolio. But we thus generate another question:

4. How can evaluators best be trained to achieve consistency in

a. Amount of credit recommended?
b. Level of credit recommended?
c. Avoidance of overlapping credit?
d. Handling of prerequisites.

How can we ensure a consistency of overall approach among faculty evaluators, without infringing upon their academic expertise?

We try, through written guidelines for evaluation accompanying each portfolio sent to an evaluator, through formal training, through responses to evaluators' recommendations, through informal conversations with evaluators. But since each evaluator works essentially in private, we are constantly uncertain about the consistency of evaluations both within a given discipline and across all disciplines. And thus we wonder,

5. If an evaluator's recommendation seems to low or too high, should we ask another evaluator to review the portfolio? And

6. If so, how should we handle widely divergent recommendations -- e.g., 3 credits from evaluator A (presumed to be too low) and 24 from evaluator B (is this in fact a realistic recommendation, or too high?)

We have indeed sought supplemental evaluations, not often, and have felt guilty each time we've done it. We have come to believe that in such cases once the second evaluation is complete we should invite both evaluators to meet with us and jointly thrash out an appropriate award of credit. We're grateful that the need to do this doesn't arise often, since the process is time-consuming, costly, and fraught with the potential for acrimony.

Probably questions 5 and 6 can be largely avoided by careful attention to the training of evaluators.

Each time we send out a flock of portfolios to be evaluated, at least one faculty member is certain to ask: "How do I know that the material in this portfolio is genuine?" While we -- having interviewed the students during screening, and having discussed the portfolio with the seminar instructors -- are fairly certain that our students are being honest in their presentations, we nonetheless ask

7. How can administrators be certain of the authenticity of students' supporting documents? What approaches can students, faculty evaluators, and administrators take to demonstrate or verify the authenticity of such material?

Strategy

Experiential learning is often viewed with great skepticism by traditional academics. So administrators of programs like EXCEL must often devise straategies for converting the reluctant. Our two most serious questions have been:

8. What is the best strategy for expanding the range of academic areas that can be evaluated? What are the institutional constraints? The political considerations?

9. How can skeptical potential evaluators be persuaded that collegiate learning can in fact occur outside a collegiate institution? What's the best response to the attitude, "If the student didn't learn it in my classroom, s/he doesn't really know the material and certainly doesn't deserve credit!"?

Since the answers to these questions depend on the institutional climate, we offer no answers -- only the comment that just when they seem to have been answered once and for all, then they crop up again in a new guise.

The Role of Experiential Learning in the Curriculum

Assuming that an institution has committed itself to awarding credit for prior experiential learning, there are still many questions to be settled. For instance,

10. May experiential credit be used in partial fulfillment of specific curricular requirements? If so,
    a. All requirements?
    b. Only some requirements? Which ones? How is the decision made?
    c. What happens when a student receives only partial experiential credit (say 1 or 2 credits toward what is ordinarily a 3-credit course)? Must the student take the required course? Must, or can, the student accept the experiential credit too?

11. What happens when a student's recommendations for experiential credit exceed the institution's ceiling (ours is 30 credits) for experiential credit?
    a. Stick to the limit?
    b. Raise the ceiling for everyone?
    c. Decide on a case-by-case basis?
Is academic credibility then affected?

For many of our colleagues at other institutions, the labeling of experiential credit has been troublesome. At issue, of course, are the transferability of credits to other institutions, and so-called "truth in labeling." The issues seem to be these:

12. How should experiential credits be recorded on transcripts?

a. Labeled "experiential" or simply recorded as course equivalents?

b. Labeled residential or transfer credit?

c. Given specific course titles matching those in the catalog, or given titles descriptive of the learning that is being credited?

d. Recorded in a bloc (e.g., 22 credits), broken down into units by academic discipline (e.g., 9 credits computer science, 9 credits business management, and 4 credits information systems management), or broken down into rough course equivalents?

Financial Questions

The fundamental question to be answered is whether experiential learning is a service or just another course offering. If an experiential learning program is provided as a service, it will of course not have the same financial obligations as a program that is expected to break even.

13. Must the program be self-supporting? In full? In part?

14. If the program is self-supporting, how can it be protected from the criticism that it "sells" credits?

15. How should students be charged for the evaluation process and for credits awarded as a result?

a. If there is a portfolio-preparation seminar, should it be credit-bearing or non-credit? Concomitantly, should it be fee-based or free?

b. Is it necessary to keep separate the costs of evaluation and the costs of posting credits? (If so, some combination of evaluation fee plus posting fee will no doubt be necessary.)

Amongst the possibilities are

A. Imposing no separate evaluation fee, but charging for each credit generated through experiential learning at the tuition rate currently prevailing. This approach is the most likely to lead to accusations of selling credit.

B. Imposing an evaluation fee, either a flat rate that is the same for all students, or a sliding scale based on the number of evaluations the portfolio receives. An evaluation fee may, but need not be, accompanied by a posting fee.

C. Imposing a posting fee, either in addition to or instead of an evaluation fee. The posting fee may be the same as a tuition fee (see paragraph A, above) or may be smaller. The posting fee may be a flat fee that is the same for all students, or may be based on the number of credits awarded.

We formerly used the tuition approach to charging for experiential learning credit. However, our the current tuition is $67.00 per credit, so under this system a student who earned the maximum of 30 experiential credits would pay $2010.00, as much as it would cost to earn the same number of credits by taking traditional classroom courses. This expense is prohibitive (few of our students ever register for more than 12 credits per semester) and discourages students from applying to EXCEL. So we have recently switched to an evaluation fee/posting fee system. Our portfolio evaluation fee is $150.00 for one or two evaluations, $250 for three or four evaluations, and $350 for five or more; the typical portfolio receives two evaluations. Our posting fee is $30 per credit. Thus a student whose portfolio receives two evaluations and earns the maximum 30 credits would pay a $900 posting fee in addition to the $150 evaluation fee, a total of $1050. This is enough to keep our program fiscally sound -- and a sufficient savings to make the program attractive to students.

16. How should faculty evaluators be paid? What's fair, and yet within budgetary limits?

a. No payment to faculty, whose evaluation of portfolios is simply a part of the non-teaching duties covered by their regular salary?

b. A flat fee for each portfolio evaluated, regardless of the size of the portfolio?

c. A sliding fee, dependent on the size of the portfolio being evaluated?

d. An hourly rate? If so, what?

Because we have no resident faculty (all are adjunct, hired to teach one course at a time), we do pay our evaluators. We have chosen to pay a flat fee for each portfolio evaluated, although we are aware of the inequities in this system since the portfolios vary tremendously in size and in quality. To a certain extent, we alleviate the problem by assigning several portfolios (both strong and weak portfolios in the same group) to each evaluator. The amount of time an evaluator must spend thus averages out fairly.

Summary

Each experiential learning program must answer these questions within the context of its institution's missions and goals -- yet the program that ignores or evades such questions does so at its peril. It is our hope that by raising these problems for open discussion we have helped some of our colleagues to avoid difficulties in administering their own experiential learning programs.

ExCEL
A WAY FOR FACULTY MEMBERS TO AWARD ACADEMIC CREDIT FOR STUDENTS' PRIOR EXPERIENTIAL LEARNING

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The University of Maryland University College provides students in its statewide undergraduate programs numerous means of gaining academic credit for their prior learning: credit by examination (both internally administered course-challenge examinations and externally administered standardized examinations), transfer of credit from other institutions of higher education, and credit (as recommended by the American Council on Education) for military training and experience. These approaches provide credit principally for students' formal learning, not for the often broader and deeper college-level learning that adult students may have gained from their life experiences. This type of learning is assessed through ExCEL, a program whereby students describe and document their experiential learning so that adjunct faculty members can evaluate it and recommend the award or denial of credit. In this fashion, students benefit by having their learning validated and incorporated in their baccalaureate program, and adjunct faculty members have the opportunity to play a more intimate role in students' education than is customary in most large American universities.

It is not the purpose of this paper to argue the merits or defend the practice of including prior experiential learning in a baccalaureate degree . Rather, this paper describes the operation of a well-established and academically rigorous program for assessing prior learning. Since being formally established in 1979, EXCEL has provided about 300 students with over 4000 semester hours of credit. These numbers are small, considering University College as a whole (for instance, this spring 13,490 students enrolled in 19,281 classes for a total of 64,430 semester hours of credit, although of course not all of them will successfully complete their classes.) Nevertheless, for the individual students involved, EXCEL credits can provide as many as 30 semester hours of credit, that is, up to one-fourth of their baccalaureate degree.

The Process

A student learns about EXCEL from the academic advisors, through various University College publications, or by word of mouth. Of those who solicit information from the EXCEL office, about a third apply for admission to EXCEL; of those about half are accepted. The criteria for admission are

* The student must have completed between 9 and 75 semester hours of college credit with an average of 2.5 (C+) or better.

* The student must have substantial experiential learning that is likely to be comparable to college-level learning.

* The experiential learning must be in an academic area that is appropriate to the student's degree program (and, an institutional constraint rather than a philosophical one, the learning must be in a field for which an appropriate faculty evaluator can be provided).

* There must be no overlap between the student's academic work and his experiential learning.

A student must make formal application for admission to EXCEL; the application must be accompanied by transcripts from all colleges or universities the student has previously attended. Receiving an application, we screen it, first to be sure that the basic criteria have been met and then according to the following additional criteria:

* Whether or not the student could gain credit effectively through other programs such as course-challenge or standardized examinations, evaluations of military occupational specialties or training, or transfer of credit from other institutions. If credit is available through these sources, EXCEL will probably not be appropriate.

* Whether the breadth and depth of the student's knowledge makes it likely that a minimum 6 to 9 credit will be earned through EXCEL. The tremendous effort of preparing a satisfactory portfolio is really not justified unless there will be a fairly substantial credit yield.

* Whether the student has proven writing ability. (If not, we may recommend enrollment in a college-level course in expository or technical writing, followed by re-application to EXCEL.)

It is easy to spot the student who is exceptionally well qualified for EXCEL, and the one who is not at all qualified. These students receive prompt notice of their acceptance or rejection. About half the applicants, though, seem marginal, and these we invite to an interview so that we can assess their background in somewhat more detail than the application form allows. We are generally able to tell interviewees on the spot whether or not they are admitted to the program. If the student is rejected, we explain why. The most common reasons are these: the experiential learning overlaps academic credit already earned, the learning is in an academic area for which we are unable to provide an evaluation, the learning does not seem broad enough to generate much credit.

Each student accepted into EXCEL enrolls in a three-credit portfolio-preparation seminar. Our computerized registration process is set up to prevent enrollment by students not formally accepted into EXCEL (and on several occasions when unqualified students have tried to register we have been grateful for this provision). The seminar lasts for 15 weeks. During that time, the instructor guides the student in preparing a portfolio. Each portfolio consists of the following elements:

1. A statement of educational and career goals and objectives, in the course of which the student explains how the experiential learning to be described in the portfolio fits into the overall plan.

2. A chronological table, indicating the learning the student has gained throughout life, through formal education, career or vocation, volunteer work, and other activities. Though skeletal, this table often helps the student realize entire areas of learning s/he might otherwise have overlooked.

3. An autobiography. Some are extraordinarily detailed and personal, others focus primarily on the student's professional background. Our experience has been that, paradoxically, the more sharply focussed the autobiography, the less likely the student is to earn a large amount of credit.

4. A "narrative delineation" of the learning the student has gained in a given field, one delineation for each field. The delineations are essays in which the student describes what s/he learned, how s/he learned it, and how it might apply in other contexts. (Some students have trouble differentiating between the experience and the learning derived from that experience. It is in the delineation that such a difficulty will come to light.)

5. For each delineation, documentation -- that is, material from sources other than the student -- indicating that the student has in fact had the experiences and acquired the learning described in the delineation. Documentation may take the form of statements by employers, supervisors, and coworkers or of products of the student's work (audiotapes, videotapes, photographs, computer programs). In fact, the documentation is as varied as the students presenting it.

While producing the portfolio, the student submits it piecemeal to the seminar instructor, who reads it and recommends changes. At the end of the term, the instructor reads each completed portfolio, recommends the delineations that should receive formal evaluation by the faculty, and indicates to our office the relative strengths and weaknesses of the portfolios.

The EXCEL office assigns faculty evaluators to each portfolio, generally one evaluator for each academic area described in the portfolio. The evaluators are paid $50 for each portfolio they evaluate; generally, an evaluator receives several portfolios to work on, a strong one paired with a weak whenever possible. Evaluators are given written guidelines for evaluation, and new evaluators receive a personal orientation to EXCEL and the concept of experiential learning.

Once portfolios have been distributed for evaluation, the student receives a billing memo for the evaluations. S/he will receive no results of the evaluations until s/he has paid for the evaluations. (We hate to seem crass, but we are required to keep the program fiscally sound.) The evaluation process and clerical procedures associated with it can take as long as six months, although three months is more typical. Our goal is to complete a student's EXCEL experience within two consecutive terms, one for the portfolio-preparation seminar and one for portfolio evaluation, so that in the following term the student can intelligently choose those courses that will best fit his or her degree program.

The faculty evaluators play the central and crucial role in the entire EXCEL process: Their recommendation for the award or denial of credit is binding (subject only to minor review, as described below). The evaluators address the following issues:

1. Does the portfolio reveal evidence of college-level learning?

2. If so,

    a. At what level -- lower (i.e., freshman or sophomore, traditionally numbered 100 or 200) or upper (i.e., junior or senior, traditionally numbered 300 or 400).

    b. How much learning is there, translated into semester hours of credit? (It is neither necessary nor desirable for the evaluators to think in terms of 3-credit units; in fact, we prefer that they not do so, since life and experience do not generally occur in 3-credit units.)

    c. With what traditional courses (if any) can the learning be equated, and how should it be designated on the student's academic record?

3. If not, why not? Presumably at least three people -- the student, the administrator who admitted the student to EXCEL, and the seminar instructor -- felt that the student had learning that would justify the award of credit. Were they wrong, or did the student have learning but lack the ability to articulate it effectively?

Upon receiving the evaluator's recommendations and justification, we examine the student's complete academic record, including all transfer credit from all sources, to determine what the final award of credit should be. We are particularly careful to avoid duplication of credit, and thus it occasionally happens that we must discard some of the EXCEL credit because the student has previously received credit for the same learning. It occasionally also occurs that, when a portfolio has had several evaluators, the total recommendation of credit may exceed the 30-credit ceiling for experiential learning credit. In such cases, the student (in consultation with an academic advisor) is the one to determine which credits will most effectively fit into his total degree program.

The final award of credit is made by the Dean of University College. Credit is posted to the student's academic record upon payment of a posting fee -- and voila! The student has, through dint of hard work, come that much closer to the baccalaureate degree.

The Contributions of the Faculty

The undergraduate faculty of University College consists almost entirely of adjunct faculty, that is, lecturers hired on a per-term basis to teach one or two courses. Although many of them have been associated with University College for a number of years, there is in fact no ongoing core of faculty. The EXCEL program provides one modest means of giving these adjunct lecturers a role in academic governance. It brings them face to face with a number of important issues:

* What is academic credit, and what does it mean?
* What is learning? How do we know when it has occurred?
* What does it mean to say that learning is "collegiate"?
* Wherein lies the difference between upper- and lower-level learning?
* Can a student in fact have upper-level knowledge without ever having learned the lower-level prerequisites? (Indeed yes!)

Often, it is the faculty who point out to us problems inherent in the operation of EXCEL. For instance,

* Amateurish portfolios may be under-evaluated, and a "slick" portfolio may garner too much credit.

After several evaluators pointed out this problem (it should have been obvious to us, but wasn't), we made substantial changes in EXCEL. For instance, we required that all students use a standard format for their portfolios; we asked the seminar instructors to provide increased emphasis on the importance of solid content -- they had already been stressing it -- and to point out that poor presentation has a negative impact on evaluation; we began training evaluators to view delineation and documentation in tandem, instead of following their natural inclination to weigh one or the other more heavily; and we began occasionally to send a portfolio out for reevaluation when the recommendation of credit seemed not to match of perception of the student's learning.

* Why do students whose portfolios emphasize computer science or informations systems management routinely receive higher credit awards than those presenting business management?

After evaluators pointed out this inequity, we used the information as part of an ongoing review and revision of the undergraduate curriculum. Computer science and information systems management still garner a large share of EXCEL's credits, but we are now confident that it is not because of a flaw in the curriculum; rather it is because those are young and growing fields in which many professionals have acquired vast learning on the job. EXCEL's faculty evaluators, validating that learning, now comment that the curriculum is finally beginning to catch up with the real world.

* Some disciplines, and some people, are inospitable to the concept of experiential learning.

In working with our faculty evaluators, we have learned to accept what's unchangeable (some disciplines are closed to EXCEL, if not forever then for the foreseeable future), to proseletyze (some disciplines can be cracked, with careful politicking and with major assistance from the faculty experts), and to use our most enthusiastic faculty evaluators to recruit new evaluators in their own or related disciplines.

Conclusion

The EXCEL program, serendipitously directed by the Assistant Dean, Faculty Development, has provided an unusual opportunity for faculty development amongst the EXCEL evaluators. It has enabled adjunct faculty members to examine their assumptions about their disciplines, about the nature of learning, and of the role of various kinds of learning in the curriculum. Faculty members who serve as EXCEL evaluators comment on the way their own experiential learning enhances their teaching. They enjoy reading the portfolios, they enjoy wrestling with the problems that portfolio evaluation raises, and they look forward eagerly to the next semester's batch of portfolios. For our part, we welcome the opportunity to draw our best and most concerned adjunct faculty more deeply into the academic life of our institution.

EVALUATION OF TEACHING: AN INTERNATIONAL PERSPECTIVE

SATURDAY, 7 JULY

1100 - 1230

ATTITUDES OF UNIVERSITY FACULTY TOWARD STUDENT RATINGS: A MACRODIMENSIONAL APPROACH

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University of Haifa

Student ratings in higher education are utilized by instructors in order to improve teaching, by administrators in tenure and promotion considerations and by students in order to aid them in their course selection (Bejar, 1975; Seldin and Wakin, 1975; Goldschmid, 1978). It is generally assumed that the use of student ratings for the purpose of improving teaching is the most valuable (Hutchison, 1974; Rotem and Glasman, 1977; Goldschmid, 1978). Yet, it has been pointed out that in order to utilize it effectively, instructors must care about this feedback (Goldschmid, 1976; Rotem and Glasman, 1977). It seems reasonable to suggest that the degree that instructors care about this feedback is strongly related to their attitudes toward student ratigns. Thus, assessing the attitudes of instructors toward student ratings provides valuable information for those committed to better the quality of instruction in institutions of higher education. Yet, very little research has been performed in order to evaluate how instructors as a whole or various subsamples feel about student ratings (Rich, 1976:19).

The present study is an attempt to investigate these attitudes in order to test the hypothesis that instructors' attitudes toward the stability and accuracy of student ratings as a measuring instrument are hierarchacly structured. Testing this hypothesis by means of scalogram analysis (Guttman scale) offers the following practical advantages. First, the scalogram analysis will allow us to determine whether or not a sample of instructors share a pattern structure of these attitudes. Second, if the existence of such a pattern is established, the analysis will yield not only a hierarchacly ordering of the instructors, but also an hierarchacly ordering of the items measuring these attitudes. Third, the development of a unidemensional scale on which the instructors can be given scores may serve as a diagnostic tool for operational purposes.

Thus, the first objective of this study is to explore the possibility of using the macrostructural unidemensional approach for assessing the pattern structure of attitudes of university instructors toward the stability and accuracy of student ratings as a measuring instrument. The second purpose is to investigate whether the pattern structure of these attitudes is related to the academic affiliation of the instructors.

Research Procedure

(a) Instrument and Subjects: Data for the present study were collected with the aid of a questionnaire distributed to a sample of 307 instructors in one of the major universities in Israel during the fall semester of the 1981/82 academic year. The questionnaire consisted of items measuring attitudes toward student ratings of isntruction. Items were case into a Likert type questionnaire on a 5-point scale whereas low scores indicate disagreement and high scores indicate agreement.

(b) Item Selection: Guttman (1944, 1947) stated that the process of attitude item selection should be guided by intuition and experience and the ones which are selected should have the most homogenous content. Thus, item analysis procedures usually are not a necessary part of this scale analysis. Yet, it seems that items that have been found to meet some internal consistency tests are more apt to meet the requirements of a cumulative scale (Edwards, 1957). Thus, we have included in the study five attitude items for which the internal reliability as measured by Cronbach's alpha was $\alpha = 0.74$ and the values of Yule's Q correlation coefficient ranging from 0.42 to 0.68 indicating an acceptable level of reliability (for item wordings and internal reliability tests see Table 1). A cutting point (4), was selected for all five items.

Insert Table 1 about here

FINDINGS

Inspection of Table 2 reveals that the coefficients of reproducibility and scalability are above the conventional criteria of 0.90 and 0.65, respectively (Edwards, 1957) indicating that all five attitude items form a cumulative scale. Thus suggesting that the instructors in the sample share a pattern structure of the attitudes toward the stability and accuracy of student ratings as a measuring instrument. A closer examination of this pattern indicates that it is structured in a hierarchicaly way: the lower the attitude item is ranked on the hierarchy the more it refers to an abstract element of student ratings which bears no personal effect on the instructor. The attitude item which is ranked in the top of the hierarchy refers to a concrete element of student ratings which bears a personal effect on the instructor.

Insert Table 2 about here

The 84 "scale type five" instructors (27%) who are favorably disposed to the attitude item ranked at the top of the hierarchy: "student ratings are reliable enough to be used in tenure and promotion consideration", (item A in Table 2), are also favorably disposed toward all the attitudes lower down in the hierarchy (items B through E in Table 2). Thus, accepting that student ratings are reliable enough to be used in personal considerations represents the greatest degree of conviction required from an instructor. This is the most "difficult" attitude and the least frequent one. (Note that the relative frequency (31%) appearing in column A includes 11 errors.) The 24 "scale type two" instructors (8%) who are favorably disposed toward the attitudes: "it is important for instructors to utilize student ratings feedback" and "students have the right to rate their instructors" (items D and E in Table 2) are favorably disposed only to the lowest ranking attitudes in the hierarchy. Thus, accepting these attitudes represents the lowest degree of conviction required from an instructor. These are, then, the "easiest" attitudes and the most frequent ones. (Note that their relative frequency is 100%, and no errors are recorded). There are two more noteworthy observations to be made about Table 1. First, "scale type 4" is the most frequent type (48%) among all scale types. Second, the relative frequencies of attitude items B and C are similar (80% and 83% respectively), with a relatively high number of errors recorded for each item (21 and 28 respectively). Apparently, these two attitude items are not very easily differentiated by the degree of conviction needed for them in order to be "accepted" by the instructors.

Insert Table 3 about here

Table 3 represents the results of the scalogram analysis performed on the two sub-samples: faculty of the social sciences and faculty of the humanities. These results actually enhance the findings for the total sample, with two minor exceptions in the sub-sample of the faculty of the humanities. First, the value of the coefficient of scalability is a little below the conventional criterion (R = 0.58 vs. R = 0.65). Second, item C replaces item B in the hierarchly ordering of the attitude items. Thus, for instructors in the faculty of the humanities subsample accepting that students tend to rate their instructors objectively demands a greater degree of conviction than accepting that students have the tools to rate their instructors. We suspect that these two exceptions may be the outcome of the relatively small size of this subsample (N = 103). The relative frequencies of all scale types as well as of all attitude items are very similar in the total sample and in the two sub-samples. These findings indicate that the pattern structure of these attitudes which has been identified by the scalogram analysis is not related to the academic affiliation of the instructors.

DISCUSSION

In the foregoing analysis we have demonstrated that attitudes toward the stability and accuracy of student ratings as a measuring instrument form a cumulative scale which is shared by the instructors in the sample as well as in the two sub-samples. This cumulative scale implies more than ranking attitude items and aggregating proportions of instructors. This scale implies the existence of particular constrains on the individual attitude items. If instructors accept only two items, it means that they have only accepted the two items in the bottom of the hierarchy. On the other hand, those instructors who accept the attitude item ranked on the have also accept all attitude items included in the scale. Thes These instructors have accepted the most "difficult" attitude item which bears a personal effect on the instructor. They are the ones who actually possess the highest degree of conviction in stability and accuracy of student ratings as a measuring instrument. Unfortunately, these "scale type" instructors are less than 30% of the sample, whereas the majority of the sample still has not yet overcome the particular constrain that this attitude item contains.

In summary, this type of scale offers practical implications for those who wish to improve the quality of instruction in institutions of higher education. This scale provides practical examples of where to start, i.e., where the "+'s" run out, (Christenson, 1975) and with whom.

References

Bejar, I.I. (1975), "A survey of selected administrative practices supporting student evaluation of instructional programs." Research in Higher Education 3: 77-86.

Christenson, J.A. "Quality of community services: a macrodimensional approach with experimental data." Rural Sociology 4: 509-525.

Edwards, A. (1957) Techniques of Attitude Scale Construction. Englewood Cliffs, N.J.: Prentice-Hall

Goldschmid, M.L. (1976). 'Teaching and learning in higher education: recent trends'. Higher Education 5: 437-456.

Goldschmid, M.L. (1978). "The Evaluation and improvement of teaching in higher education", Migher Education 7: 221-245.

Guttman, L.L. (1944). "A basis for scaling qualitative data." American Sociological Review 9: 139-150.

Guttman, L.L. (1947). "On Festinger's evaluation of scale analysis." Psychological Bulletin 44: 451-465.

Hutchison, J. (1974). "Faculty and student attitudes toward evaluation of teaching." ERM Magazine 7: 9-11.

Rich, H.E. (1976). "Attitudes of college and university faculty toward the use of student evaluations." Educational Research Quarterly 3: 17-28

Rotem, A. and Glasman, N. (1977). "Evaluation of university instructors in the United States: the context." *Higher Education*, 6: 75-92

Seldin, P. and Wakin, E. (1975). "Student now get to help decude the worth of their professors: The New York Times, June 8.

TABLE 1

Item Wordings, Zero Order Correlations and Yule's Q Correlations Between All Attitude Items Included in the Scalogram Analysis (N=307)

	Zero-Order Correlations					Yule's Q Correlations				
	A	B	C	D	E	A	B	C	D	E
A. Student ratings are reliable enough to be used in tenure and promotional considerations.	-					-				
B. Students have the tools to rate their instructors.	.53*	-				.89	-			
C. Students tend to rate their instructors objectively.	.31*	.35*	-			.42	.68	-		
D. It is important for instructors to utilize student ratings feedback.	.38*	.41*	.23*	_		1.00[1]	1.00	1.00	-	
E. Students have the right to rate their instructors.	.34*	.43*	.43*	.43*	-	1.00	1.00	1.00	1.00	-

Cronbach's alpha = 0.74

*Significant at 0.00 level.

[1] Yule's Q attains a value of 1.00 under conditions of weak monotonicity.

TABLE 2

A Scalogram Analysis for Attitudes Toward Student Ratings - Total Sample (N=307)

Scale Type	Total Sample					Totals (Scale Type)	
	Items						
	A	B	C	D	E	Absolute Numbers	Relative Frequencies
High 5	+	+	+	+	+	84	(27%)
4	(11)*	(2)*+	(9)*+	+	+	146	(48%)
3		(19)*	(19)*+	+	+	53	(17%)
Low 2				+	+	24	(8%)
1						0	
Absolute Numbers	95	247	255	307	307	60	(19%)
Relative Frequencies	(31%)	(80%)	(83%)	(100%)	(100%)	307	(100%)
Errors	11(18%)	21(35%)	28(47%)	0	0		

Coefficient of Reproducibiity = 0.97

Minimum Marginal Reproducibility = 0.87

Coefficient of Scalability = 0.71

TABLE 3

A Scalogram Analysis for Attitudes Toward Student Ratings - Faculty of Social Science (N=203) and Faculty of Humanities (N=103)

Scale Type	Faculty of Social Sciences Items					Totals (Scale Type)		Faculty of Humanities Items					Totals (Scale Typ	
	A	B	C	D	E	Absolute Numbers	Relative Frequencies	A	C	B	D	E	Absolute Numbers	Relativ Frequen
High 5	+	+	+	+	+	59	(29%)	+	+	+	+	+	25	(24%)
4	(7)*	(2)*+	(5)*+	+	+	93	(46%)	(4)*	(4)*+	+	+	+	52	(51%)
3		(11)*	(11)*+	+	+	35	(17%)		(10)*	(10)*+	+	+	18	(17%)
Low 2				+	+	16	(8%)		+		+	+	8	(8%)
1						0							0	
Absolute Numbers	66	161	171	203	203	203	(100%)	29	83	85	103	103		(100%
Relative Frequencies	(31%)	(79%)	(84%)	(100%)	(100%)			(28%)	(81%)	(83%)	(100%)	(100%)		
Errors[a]	7(19%)	13(36%)	16(45%)	0	0	36	(18%)	4(14%)	14(50%)	10(36%)	0	0		(27%)

Coefficient of Reproducibility = 0.96

Minimum Marginal Reproducibility= 0.85

Coefficient of Scalability = 0.74

Coefficient of Reproducibility = 0.95

Minimum Marginal Reproducibility= 0.87

Coefficient of Scalability = 0.58

TEACHING EVALUATION IN JORDANIAN UNIVERSITIES

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University of Jordan

1. Introduction. Jordan has three universities:The University of Jordan, Yarmouk University , and Mu'tah University.We shall present in this paper an account of the approach and methods applied by the three Jordanian Universities for the purpose of teaching evaluation. It should be mentioned , however, that although each university has its own regulations and by-laws , their approaches to teaching evaluation are quite similar.Hence , we shall focus on the approach of The University of Jordan and indicate variations relevant to Yarmouk University and Mu'tah University as appropriate.

Teaching evaluation must be discussed in the light of faculty responsibilities. In Jordanian Universities, like other present-day colleges or universities, faculty responsibilities are classified in three major activities:teaching, research , and university and community related rervices ([1] ,[3] , [4]). The performance of a faculty member in each of these three activities is taken into consideration upon discussing issues of salary advancement, promotion , tenure or other personnel related matters.Only by complete appraisal of faculty effectiveness in all activities can wise decisions be made.It should be stressed, however, that a good comprehensive evaluation method should be based on a proper balance of teaching, research, and university and community related services.

For the purpose of the present paper, however, we shall restrict our discussion to teaching evaluation only.In section 2 , we consider sources of information on teaching effectiveness; while section 3 presents methods of formalizing teaching evaluation.Some concluding remarks and recommendations are given in section 4.

2. Sources of Information on Teaching Effectiveness. Information on teaching effectiveness in Jordanian Universities is primarily based on evidence resulting from the following three types of observations which are made on the teaching performance of faculty members:

(2.1) Observations made by department chairmen: It is the chairman's responsibility, as stated by the university law and by-laws, to observe the quality of teaching and create the proper atmosphere which guarantees good and effective teaching. The chairman develops, through his contact with the faculty member and his students, some conception of the quality of his teaching. Moreover, the chairman has the opportunity of collecting evidence related to the quality of teaching through his participation and supervision of the program designed for development of junior faculty members. Observations made by the chairman are translated into information to be included in an annual report which he is required (by university law) to submit to the college dean.

(2.2) Observations made by senior colleagues: Faculty by-laws require the senior faculty member in the same area of subspecialization to help, supervise, and direct the work of junior members in the same area. In multi-section courses, in particular, a senior faculty member plays an important role in observation, supervision, and training of junior colleagues. Such observation by senior faculty members provide the department chairman with valuable additional information which strengthens the basis of his annual report.

(2.3) Observations made by students: Although student evaluation of teaching effectiveness is recommended by the university administration, it has never been made obligatory to all colleges. It is left to the individual college to decide on this matter. Thus, some colleges made student evaluation mandatory, and some other colleges left it to the individual faculty member to decide. Needless to say, the difference in opinion on this issue is a result of conflicting views concerning the advisability and usefulness of soliciting students' views on teaching effectiveness.Ido not propose to say anymore about this issue since supporting and opposing views are generally well known.I shall only state, however,that sporadic unsystematic student evaluations of teaching which are often used suffer to a much larger extent from the drawbacks which are usually ascribed to a systematic approach of soliciting students' opinion.It should by added that in some colleges, where student evaluation is mandatory it is administered processed and summarized through the chairman's office with the help of the Computor Centre ;and hence the results are passed on to the faculty member concerned with a copy to the dean.This provides the chairman with a third source of information on teaching effectiveness,which in turn enriches his annual report in this respect.

3. Formalization of Teaching Evaluation.

(3.1) Administrators' evaluation: In the university of Jordan,it was decided to formalize evaluation by developing a report form and requiring that it be completed and submitted to the President with some recommendations when significant decisions are to be made with regard to an individual faculty member.The faculty regulations [6] require a joint report, assessing the faculty member's teaching ability,to be prepared jointly by the Department Chairman,the College Dean, and the Vice-President concerned.For this purpose, the three-man committee holds a special meeting.In this meeting,observations of types (2.1),(2.2)and(2.3) of the previous section are presented, discussed, summarized and hence evaluated collectively.The resulting judgement is reflected in a written report endorsed by all three university officials and submitted to the President.A special form was initially designed for this report. After use for some time, the initial form has been recently developed into a new more informative form which admits summary in terms of a quantitative measure .

At Yarmouk University, the department chairman is required to submit a report about the teaching ability of the faculty member concerned [8] . It is presently proposed, however , that the current regulations be amended to require a three-person committee to submit a joint report.The proposal suggests that this committee consist of the college dean,the department chairman, and a senior faculty member in the same area of specialization as the faculty member concerned.

The proposed Mu'tah University faculty regulations [7] specify a (0-100) point scale for faculty evaluation. The scale assigns 35 points for teaching, 40 points for research, and 25 points for university and community services. Since the minimum period for promotion is five years,the maximum annual score for teaching is 7 points.The annual score for teaching is based on an annual joint report by the department chairman and dean.Summary of this report is expressed in one of the ratings: excellent , very good, good , and satisfactory , which corresponds to scores of 7,6,5, and 3 points, respectively.Minimum total scores of 60,70 and 75 , respectively, are required for tenure appointment,promotion to the rank of Associate Professor and promotion to the rank of Full Professor.

(3.2) Students' evaluation: The proposed faculty regulations of Mu'tah University refer explicitly to a standard teaching effectiveness questionnaire approved by the University Council and applied regularly for all courses offered by the University.In The University of Jordan and Yarmouk University, however, teaching effectiveness questionnaires are not obligatory, as stated earlier, although some colleges use them regularly.The questionnaire format applied in different colleges are not identical , although the various formats in use share a considerable number of basic items.It was not found advisable to design a uniform format to allow for the differences in instructional methods which are appropriate for different disciplines.Hence, each college developed its own questionnaire with expert help from the College of Education. It should be stated, however, that all different formats include not only an appraisal of what the teacher does but also an appraisal of the course: content, assignments, textbook, examinations and other related considerations.

(3.3) Special-Purpose evaluation: It is worth mentioning that at the University of Jordan, and in some special cases, the teaching ability of a new recruit for a faculty position is evaluated by requiring him to deliver a lecture in his area of specialization before a committee composed of the department chairman, the college dean and the vice-president concerned.This approach has been developed especially for recruits who did their graduate work in a language other than the language of instruction at the college concerned. Among other things, the three-man committee is required to report on the recruit's language proficiency.In a similar manner , and in all three Jordanian Universities, the department chairman and one or more of the faculty members concerned play an important role in evaluating the prospective teaching ability of a Teaching Assistant nominated for Ph.D scholarship by the university.Tenure of such scholarship normally involves obligation by the Teaching Assistant to accept faculty appointment after his graduation for a period of time equal to twice the duration of the scholarship.

4. Some Concluding Remarks and Recommendations.Systematic evaluation of teaching effectiveness is considered by Jordanian Universities an essential factor in improving the educational process.First, it is needed for identification and recognition of good teachers who derserve to be rewarded in connection with decisions of salary advancement,tenure and promotion. Secondly, systematic teaching evaluation provides a regular flow of information which helps in decision-making geared towards better teaching and learning.

We have presented above a brief review of the approach and methods applied by Jordanian Universities in collecting information about teaching and then using this information for evaluating and improving teaching effectiveness.Moreover, this information is combined with all other information related to research and service activities to form the entire body of information used in faculty related decisions.

This paper will be concluded by a few recommendations which are believed to support and strengthen the methods described above:

(a) Peer evaluation of teaching ability should be encouraged , especially by senior colleagues recognized as experienced good teachers.This could include, among other measures , holding conferences with junior colleagues and reviews of teaching assignments and tests prepared by junior faculty members.

(b) Administrators' evaluation should not be restricted to teaching ; but it should also include evaluation of teaching related activities like course design ,curriculum planning and development and supervision of teaching.

(c) Formalization of teaching evaluation by administrators and by students is recommended.It is advisable to design forms with an underlying quantitative measure .

(d) Student advising is an integral part of the educational process.Hence , it should be given proper weight in any method of evaluation.The university ought to establish proper recognition for a teacher who invests time and effort in studying and learning about various specific graduation requirements in order to advise students more efficiently.

(e) Students' evaluation of teaching should also involve evaluation of the students' effort and time spent in learning . Questionnaires should be designed to measure students' sense of responsibility.In this respect,the motivation by the teacher is but on factor.Other extraneous students-related factors may play an important role in either enhancing or deterring learning.

(f) Teaching should be given its due importance in any measure of faculty evaluation.Although scholarship and research productivity are of great importance, they obviously compete with teaching at least in time allocation.This has been demonstrated in several case studies ([2],[5]) in the form of low correlations between teaching effectiveness and research productivity.

BIBLIOGRAPHY

[1] Burkhardt, F.H. The Changing Role of the Professor. in *The College And The Students* (Editors:Dennis, L.E. and Kauffman , J.F.) American Council on Education ,Washington 1966.

[2] Friedrich, R.J. and Michalak Jr.,S.J.Why Doesn't Research Improve Teaching? *Journal of Higher Education* 54,145-163 , 1983.

[3] Hamdan , M.A. The Responsibilities of a Faculty Member . Proceedings of *Symposium on Faculty Members in Arab Universities*, King Saud University , 1983.

[4] Heywood, J. *Assessment in Higher Education*. Wiley , New York 1977.

[5] Hoyt , D.P. and Spangler , R.K. Faculty Research Involvement and Instructional Outcomes. *Research in Higher Education* 4 , 113-122 , 1976.

[6] Jordan University Faculty Regulations.Issued by The University Council in Compliance with Article (33B) of The Jordan University Law ,1972.

[7] Yarmouk University Faculty Regulations.Issued in Compliance with Article (46) of The Yarmouk University Law , 1976.

[8] Proposed Mu'tah University Faculty Regulations.Issued in Compliance with Article (22) of The Provisional Mu'tah University Law No.(11) , 1981.

PROVIDING FEEDBACK THROUGH STUDENT OBSERVATION OF INSTRUCTORS

William E. Russell
Merrimack College

"Sometimes I wonder if teaching is like golf - a succession of bad habits, successivly corrected ... it seems to be the same with teaching. There are no permanent solutions; but we must not be discouraged."[1] Teaching, however, lacks the club professional to observe the bad habits and to prescribe remedies. The classroom equivalents of slicing and shanking may go undetected and therefore uncured.

Gilbert Highet provides a vivid illustration of "bad habits," ones all too familiar and often unrealized.

> "When the pupils wish to learn, the teacher must put no obstacles in their way - including himself. First of all, he must be clear. THOU SHALT NOT (he will tell himself) yield to bad habits of - er - speech; talk in a weak or wavering or slovenly voice; utter incoherent sentences to baffle the listeners; use abtruse words *(parameter, rapport, chiliastic, Weltanschauung, reductionist)* without explanation; introduce unfamiliar proper names ("as Condorcet says") without spelling them or writing them out; throw off untranslated quotations in foreign languages ("Schiller puts it extremely well, *'mit der Dummheit kampfen Gotter selbst vergebens'* ").[2]

A trained classroom observer might easily provide feedback, a condition for remedying the evident pedantry.

Ecologically, the most obvious characteristic of classroom buildings is the egg-crate design. Each classroom is physically isolated from neighboring ones by intervening walls. Within the classroom, student space is geometrically arranged in repeating rows; the teacher, however, stands alone. Culturally, the profession prescribes isolation in contrast, for example, with law and medicine, to cite two professions, in which practitioners perform in a fishbowl. Robert Dreeben notes:

> "Because they occupy isolated classrooms, teachers work separately from each other for most of the day; and since there is a prevailing taboo that teachers abstain from observing each other at work, they learn very little *at first hand* about what their colleagues are doing and how well they are doing it."[3]

Apparently, faculty colleagues whose ratings of other teachers agree fairly closely to student ratings infer effectiveness "at the podium from his performance in faculty-lounge discussions, in debates at department meetings, and in quadrangle conversations."[4] There is rarely collegial observations with relevant feedback.

Hypothetically, a necessary condition for teaching growth is relevant feedback. Teachers at Earlham College judged the response of students to their teaching important. The day to day response observed in a variety of teaching environments - laboratory, office conversation, field work, student-teacher research, classroom-affected teaching. According to those faculty interviewed at Earlham, this informal daily contact provided useful information on teaching technique. Significantly, but not surprisingly, those who mentioned formal end of course student evaluations, with one exception, judged them either of no value or of negative impact on teaching performance.[5]

Conversely, when the teacher wishes to learn about his/her performance, techniques should be available. The paper describes an element of a project for improving teaching through feedback by utilizing students as classroom observers. Other complementary components of the project were video-taping, teacher consultant, and individualized computer printed student rating forms.

BACKGROUND

This classroom observer project was conceived after reading articles about the success of similar programs at Dickinson College and Cleveland State University.[6] It was meant to be an experiment which if deemed a success could be further developed along with other methods for providing feedback. The objective was to improve the teaching effectiveness of interested instructors by providing a specific method of feedback. Teaching, in a sense, is as has been noted a private act without immanent preceptorial criticism or support. On the other hand, a higher level of teaching effectiveness may depend upon information not readily available to instructors or possible under most circumstances. Teaching, though not limited to this perspective, can be considered from a cybernetic viewpoint in which a continual flow of information from the "controlled" system is necessary for the effectiveness of the "controlling" system. The system breaks down, however, because of the tentative quality of the instructor's perceptions. Instructors can readily recognize some non-verbal cues from students, e.g. the piling of notebooks and books signaling the end of class; most more significant cues are either absent or perplexing.

STRUCTURE OF THE PROJECT

Instructor and student participation in the student observation project was fully volunteer and confidential. The project was not one of evaluation but meant entirely for classroom improvement. Each participant received a handbook that briefly described a conceptual model.[7] One element of the model, the "tactical element loop," details classroom interaction from which a cycle emerges that involves diagnosing, behaving, observing, and interpreting by the teacher. The closed loop of the four elements indicates that the aware instructor observes, interprets what is sensed, diagnoses, forming an if ... then statement and modifies behavior. The process is dynamic with instruction considered experimental. The assumption is that instruction could be enhanced if the observing and interpreting elements were refined and provided consistently, informally, and fluidly. This was the student observer's task.

Six students and six faculty were involved in the project. Students were given some training in classroom observational methods. A study guide was prepared with an audio-tape available so audio-tutorial instruction in observational methodology was possible. The aim was to provide instructors with data that was objective, useful, accurate, and that could be analyzed. The student observer would record some fragment of what occurred in class, selecting some significant aspect upon which to focus attention. Valued data, that is judgements about the appropriateness of a technique or method, were discouraged in favor of descriptive data and selected data.[8] These latter two categories do not involve value judgements. The former is data that is organized, categorized or quantified whereas the latter records objectively a specific event without categorizing or valuing the event. For example, the student observer might record the number of questions asked by the instructor, the cognitive level demanded (knowledge, understanding, analysis, evaluation, synthesis), the number of students responding, and the location of respondents. Each is an example of descriptive data. In selected data, the observer would record as far as possible the exact phrasing of the question, e.g. "If the United States had been settled from West to East what differences might now be evident?" or "What cities have developed due to rail lines?"

The student observer, blending in as unobtrusively as possible, attended the class of the matched instructor.

Students committed themselves to four weeks of observation, ideally twelve consecutive classes. The observer concentrates upon style and environment rather than content. The student arrived at class early, generally sitting in the last row, and proceed to diagram the classroom, indicating especially student seating arrangements and making a legend for observations if necessary, e.g. L - listening; N - notetaking; I - inattentive. After each observation period, observer and instructor held a conference to provide oral and written feedback on some aspect or aspects of the class. All notes became the property of the instructor. The intention was that the observer refer to the data in terms of questions to be answered rather than opinions about "effective" or "non effective" behaviors. Confidentiality was absolutely imperative. Comments by the student observer were shared only with the individual instructor with no information concerning classroom performance reaching the director of the project or other student observers.

The student observers used a variety of the observational techniques taught in the audio-tutorial workshop. A brief list follows:

1. Recording verbal behavior using a simplified version of the Flanders Interaction Analysis Categories
2. Recording movement patterns of the instructor
3. Recording non-verbal behavior
4. Observing the at-task (note taking, listening, etc.) behavior of students at timed intervals
5. Listing questions asked by instructors by recording them in verbatim fashion
6. Listing student questions
7. Recording examples offered in a verbatim fashion

Typically, during a single class the student observer used three or four observational techniques each for a limited time period. Each of the above methods provides ample data for analysis, discussion, and feedback. Observation and subsequent consultation is facilitated if status and power of the observed and observer are nearly equivalent. In this project that was not possible. However the advantage was that of perspective. Also all six participating instructors, as volunteers, were conscientious about their desire to improve the quality of their instruction. Concerning the end of class feedback conference, one student observer commented in her report:

> "I was hesitant to discuss the observation with the instructor because I was dismayed with the manner in which he conducted the class, and I did not know how I could express my observations to him appropriately. When I did converse with the instructor everything went extremely well. I simply described what I saw without making any value judgements. The instructor thoroughly responded to all my comments, and then I was able to understand his objectives, and the class format made a lot more sense to me."

RESULTS

The project certainly achieved its first objective, providing relevant feedback to instructors. The long range impact on the individual instructor could not be assessed. The six students wrote reports at the conclusion of the designated time period. Each judged from his or her perception that the experience was beneficial to the instructor and indicated the expression of similar sentiments from the instructors. The statement of one could represent faithfully the experience of all. "I felt that the instructor was very receptive to my comments and after we discussed the observation, he did state that he enjoyed the discussion and felt the feedback from me was worthwhile."

All six students indicated to some degree a serendipitous effect, a more intimate understanding of teaching. One student wrote the following:

> "I think the program was beneficial to me. It was a good and different experience to sit in a classroom and not be concerned with "learning," but, instead, to become aware of the great task the instructor has in teaching the course and doing it effectively. Without really thinking about it before, I assumed that teaching is something that comes matter-of-factly. Through this observation I learned that an instructor really does work at teaching. I think I developed the former opinion because when I take a course I am concerned with just myself as a student -- in just paying attention, taking notes, and learning, or, in some cases, in being bored, turned off, and frustrated with learning. This does not permit me to watch the instructor's responses because I am too busy responding myself. Without going into a classroom to "learn," I actually learned a lot."

CONCLUSION

The question of the Meno,

> "Can you tell me, Socrates - is virtue something that can be taught? Or does it come by practice? Or is it neither teaching nor practice that gives it to a man but natural aptitude or something else?"

might be applied to the art of teaching. Certainly aptitude, training, and practice are most important in successful teaching with the dynamics of feedback relegated to the category of the something else. Nevertheless as artists, i.e. craftsmen enamored with their work, teachers strive for quality and simple means may help the process.

REFERENCES & NOTES

1. Highet, Gilbert. The Immortal Profession. New York: Weybright & Talley, 1976, p. 80.
2. Ibid. P. 107
3. Dreeben, Robert. The Nature of Teaching. Glenview, Illinois: Scott, Foresman & Company, 1970. P. 52.
4. Center for Research on Learning and Teaching. "Evaluation of Teaching." Memo to the Family, No.53 February, 1974.
5. Mimeographed Sheet from Earlham College.
6. Carroll, K.A. (1973) "Observers in the Classroom"- American Journal of Physics, 41, 1274-1277.

   Casper, K.J. (1973) "Use of Observers in Physics Sections" - American Journal of Physics, 41, 1277-1281.

   Laws, K.L. (1977) "A Classroom Observation Program"- Liberal Education, LXIII, 1, 37-41.
7. Strasser, B. (1967) "A Conceptual Model of Instruction" - Journal of Teacher Education, 18, 1, 63-74.
8. Cooper, James et al. Classroom Teaching Skills: A Handbook. Lexington, Mass: D.C. Heath and Company, 1977.

THE SYSTEM OF THE STUDENT EVALUATION OF TEACHING AT THE UNIVERSITY OF OTTAWA

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University of Ottawa

As the financial restraints and pressure for public accountability on our institutions of higher learning continue in 1980's, the interest in faculty evaluation continues to increase. Most people who come in contact with university professors do so as students, or as parents and families of students, and therefore it is not surprising that they - and in turn the public at large - view university professors primarily as teachers. The important components in evaluating the many aspects of teaching performance include student evaluations. Some universities adopted an informal or semi-formal system of student evaluations of courses and professors, aimed mainly at providing the teachers with information data as a basis for possible improvement. Other establishments, among them the University of Ottawa, formalized and actually institutionalized their systems of student evaluation of teaching for both pedagogic and administrative purposes to such a degree that the system became an integral part of legally binding Collective Agreement between the university administration and the professors' union.

The University of Ottawa is a bilingual, publicly-supported institution serving the areas of eastern Ontario and parts of northern Ontario in both Canadian official languages, English and French. It has a total enrollment of about 25,000 students with close to 1,000 members of academic staff (the affiliated institutions are not included in the above numbers).

DEVELOPMENT AND IMPLEMENTATION OF THE EVALUATION PROCESS

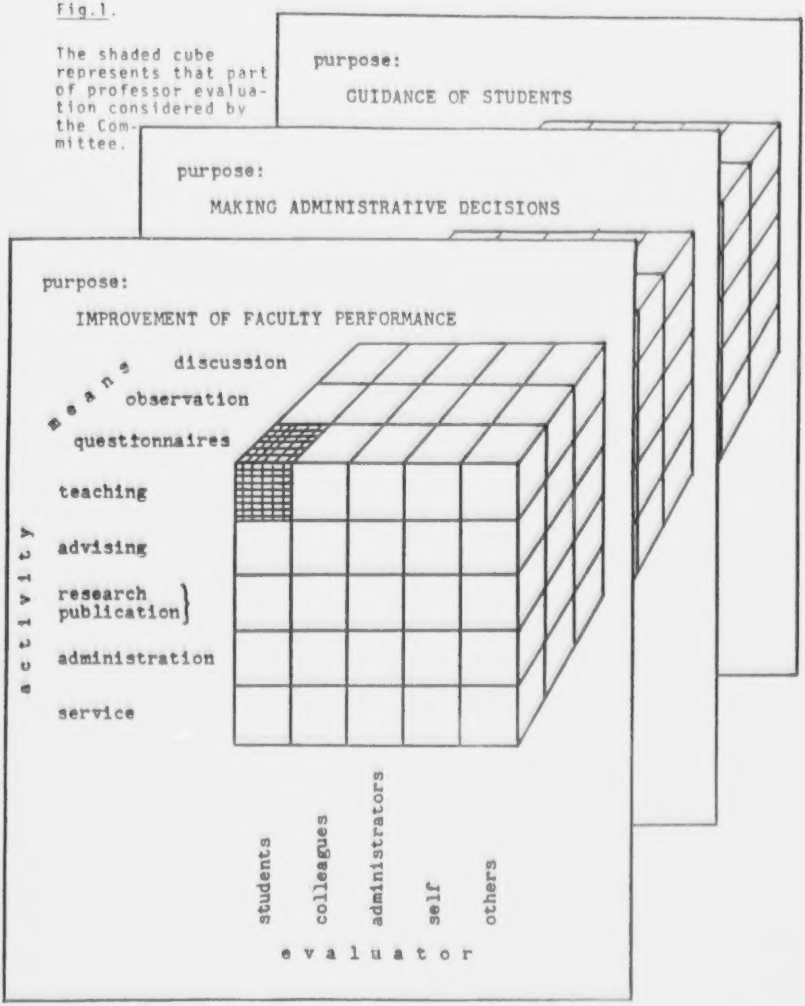
First attempts to evaluate teaching were undertaken by various student societies on campus in the late 1960's and early 1970's. Collected data were available in the offices of student societies and they were used almost exclusively for student information. In the mid-1970's, some student societies contacted their professors and asked them for their cooperation in developing better evaluation instruments and in the process of formulating the purposes of the evaluation system on a broader basis. It was soon recognized by the University administration that a system of student evaluation of teaching could lead to accumulation of data which may help the decision-making bodies to assess educational programs, teaching effectiveness and improvement systems, and to make decisions affecting the teaching-learning environment. It was recognized that support for faculty development and teaching improvement programs may have a resounding effect on the academic environment and on the morale and efficiency of both the professors and students.

In 1976, the University Senate formed an ad hoc committee of teachers and students which was given the task of formulating the purposes of the evaluation system, constructing a generally acceptable evaluation questionnaire, and suggesting a complex of related standardized administrative procedures.

The activities of the committee resulted in the Cooper's(1) report, submitted to the Senate in July 1977. As a model illus-

Fig.1.

The shaded cube represents that part of professor evaluation considered by the Committee.


purpose:
GUIDANCE OF STUDENTS
purpose:
MAKING ADMINISTRATIVE DECISIONS
purpose:
IMPROVEMENT OF FACULTY PERFORMANCE
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students
colleagues
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others
evaluator

trating the proportions of student evaluation as one component among other evaluation methods, the committee modified the 1973 Doyle's[(2)] "evaluation cube" (Fig. 1).

In laying the foundations for the construction of the evaluation instrument, the committee formulated the purposes of student evaluation of teaching and identified three groups of individuals as the users of the system:

1. Professors, so that they may become aware of their individual strengths and weaknesses and thus be able to take steps where necessary. Purpose: diagnostic and therapeutic, leading to improvement of teaching through faculty awareness and development.
2. Teaching personnel committees and administrative personnel decision-making bodies, in order to augment other information used for decisions affecting the career of professors. Purpose: administrative and managerial, leading to personnel decisions.
3. Students, so that they may have access to relatively objective, broadly based data about teaching, courses and professors. Purpose: informative, used as a guidance to students in their possible selection of courses.

In constructing the evaluation instrument, the committee undertook extensive reviews of research literature and existing questionnaires. After producing and administering an experimental questionnaire, and after a number of statistical validation analyses, the committee submitted the evaluation questionnaire composed of 25 questions in the standard section A, with additional 7 questions in the optional section B. The committee recommended to the Senate that professors teaching the courses with enrollment of six or more students be subjected to the evaluation process.

Resulting evaluation data were recommended to be available in three separate reports, corresponding to three groups of users of the evaluation system:

1. P-report, containing responses to all questions, for professor evaluated,
2. A-report, containing responses to five selected questions, for appropriate teaching personnel committees, and
3. S-report, identical to P-report, for students.

Recommendations of the committee were adopted by the Senate in February 1978, and the campus-wide system of student evaluation of teaching commenced in the academic year 1979-80. It continues, with only minor adjustments, to the present. To guide the implementation and functioning of the system, the Senate created a standing committee on the evaluation of teaching and courses composed of teachers and students. The committee reports to the executive committee of the Senate.

A-Report

The A-report is a decisive one in regard to the administrative and managerial decisions concerning the professors' teaching performance. Five questions, responses to which form the report, are:

Question No. 3:

I find the professor well prepared for the class

A. almost never B. seldom C. sometimes D. often E. almost always

Je trouve que le professeur prépare bien ses cours

A. presque jamais B. rarement C. parfois D. souvent E. presque toujours

Question No. 9:

I think the professor conveys the subject matter effectively

A. almost always B. often C. sometimes D. seldom E. almost never

Je trouve que le professeur communique efficacement la matière

A. presque toujours B. souvent C. parfois D. rarement E. presque jamais

Question No. 14:

When I need help outside class, I find the professor available

A. almost always B. often C. sometimes D. seldom E. almost never F. question not applicable

Quand j'ai besoin d'aide, je trouve que le professeur est disponible entre les cours

A. presque toujours B. souvent C. parfois D. rarement E. presque jamais F. question non-pertinente

Question No. 21:

I feel that, in this course, I am learning

A. very little B. little C. an adequate amount C. much E. very much

J'estime que, dans ce cours, j'apprends

A. très peu B. peu C. suffisamment D. beaucoup E. énormément

Question No. 23:

I find that the professor, as a teacher, is

A. outstanding B. good C. acceptable D. poor E. extremely poor

Je considère que le professeur en tant qu'enseignant est

A. exceptionnel B. bon C. acceptable D. mauvais E. extrêmement mauvais

Evaluation of Teaching and the Collective Agreement

On the initiative of the Association of Professors of the

University of Ottawa (A.P.U.O.), the negotiations between the administration of the University and the A.P.U.O. in early 1981 resulted in the inclusion of the article No. 34 - Evaluation of Teaching, in the Collective Agreement$^{(3)}$ which remains in force for three years. The article stipulates, among a number of other items, that the principal source of information in evaluating professors' teaching quality shall be the A-report. On this basis, the teaching is considered a) satisfactory when data taken from the A-report indicate that the majority of students, having assessed the professor's teaching, rate his performance as at least three (3) on the scale from one (1) to five (5), b) good when the professor's performance is rated at least four (4), and c) exceptional when the professor's teaching performance is rated by a very large majority of students as higher than four (4) on the same scale.

The related articles in the Collective Agreement, in particular the article No. 32 - Promotions, requires for promotion to the rank of Full Professor that his teaching (as one of many criteria) be assessed on the basis of the above data as being of good or exceptional quality. To be promoted to the rank of Associate Professor, the teaching must be assessed as being of good quality. The category of satisfactory teaching applies to the process of promotion to the rank of Assistant Professor.

The Collective Agreement requires in the article No. 34.2.a.) that i) the data included in the A-report must not be interpreted rigidly, but must serve rather as an indication of the quality of the professor's teaching, particularly when a pattern emerges over a few years, ii) the data considered must cover a period of at least three years except in cases where this data is available only for a shorter period; in this case, the inherent shortcomings of these data must be taken into consideration, and iii) before any administrative judgement on the professor's teaching is made, all written comments made by the progessor regarding his teaching evaluations must be considered at the same time as the data that are drawn from the questionnaire completed by students.

CONCLUSIONS

Peter Seldin(4) stated in 1980: "We know that there is no perfect system of evaluation. A completely reliable and valid system of appraisal may always remain beyond human reach".

1. The University of Ottawa does not make any claim that the system of teaching evaluation it uses is perfect. However, in the fifth year of its existence now, it represents an established, standardized and obviously viable system of teaching evaluation at an institution of no small size.
2. Consistent with one of Seldin's suggested guidelines, the implementation and maintenance of the evaluation system were made possible by significant contributions of students, faculty and administrators. Slight resistance of a minor part of the professoriate to the evaluation system was in the past, as it is at present, directed more toward the technicalities of the system and exact wording in formulation of relevent parts of the Collective Agreement rather than toward the principal issue of purposes and consequences.

Wide acceptance of the system is clearly illustrated, among other indicators, by the inclusion of the system and its administrative use into the Collective Agreement on the initiative of the professoriate. Since the existence of any collective agreement in the province of Ontario is governed by the Ontario Labor Relations Act, the system of teaching evaluation at the University of Ottawa became for all practical purposes a law, self-imposed on the academic community. This,in its consequences a far reaching fact, indicates a deep commitment of all components of the University community to the quality of pedagogic process in a pursuit for teaching excellence.

3. As stated by Murray(5) in 1980, no issue in the area of teaching evaluation is more controversial than the use of evaluation data in administrative decisions relating to faculty hiring, salary, retention, tenure and promotion. The range of opinions in research literature, from extremely negative to extremely positive, illustrates this controversy.

Legitimate fears of some professors that the evaluation results may be misused or abused by their misapplication to personnel decisions are well understandable. They must be taken into consideration in guiding the proper functioning of the system. A number of safeguards, although not perfect, are built into the above mentioned Collective Agreement in order to prevent possible misuse of evaluation results in personnel decisions. A few formal grievances leading to arbitration procedures were raised in this regard but no court action,concerning the use of evaluation results in personnel decision, was taken in the period of existence of this evaluation system.

References:

(1) Ad hoc Technical Committee on the Evaluation of Teaching at the University of Ottawa (Cooper M., Chairman): Report to the Senate, 1977.

(2) Doyle, K.O.: A Model..Some Systems..A Critique. Paper presented at the first Invitational Conference on Faculty Effectiveness as Evaluated by Students, Temple University, 1973.

(3) Collective Agreement Between the University of Ottawa and the Association of Professors of the University of Ottawa. University of Ottawa, Ontario, Canada, 1981.

(4) Seldin, P.: Successful Faculty Evaluation Programs. Coventry Press, Crugers, New York, 1980.

(5) Murray, H.G.: Evaluating University Teaching: A Review of Research. Ontario Confederation of University Faculty Associations, 1980.

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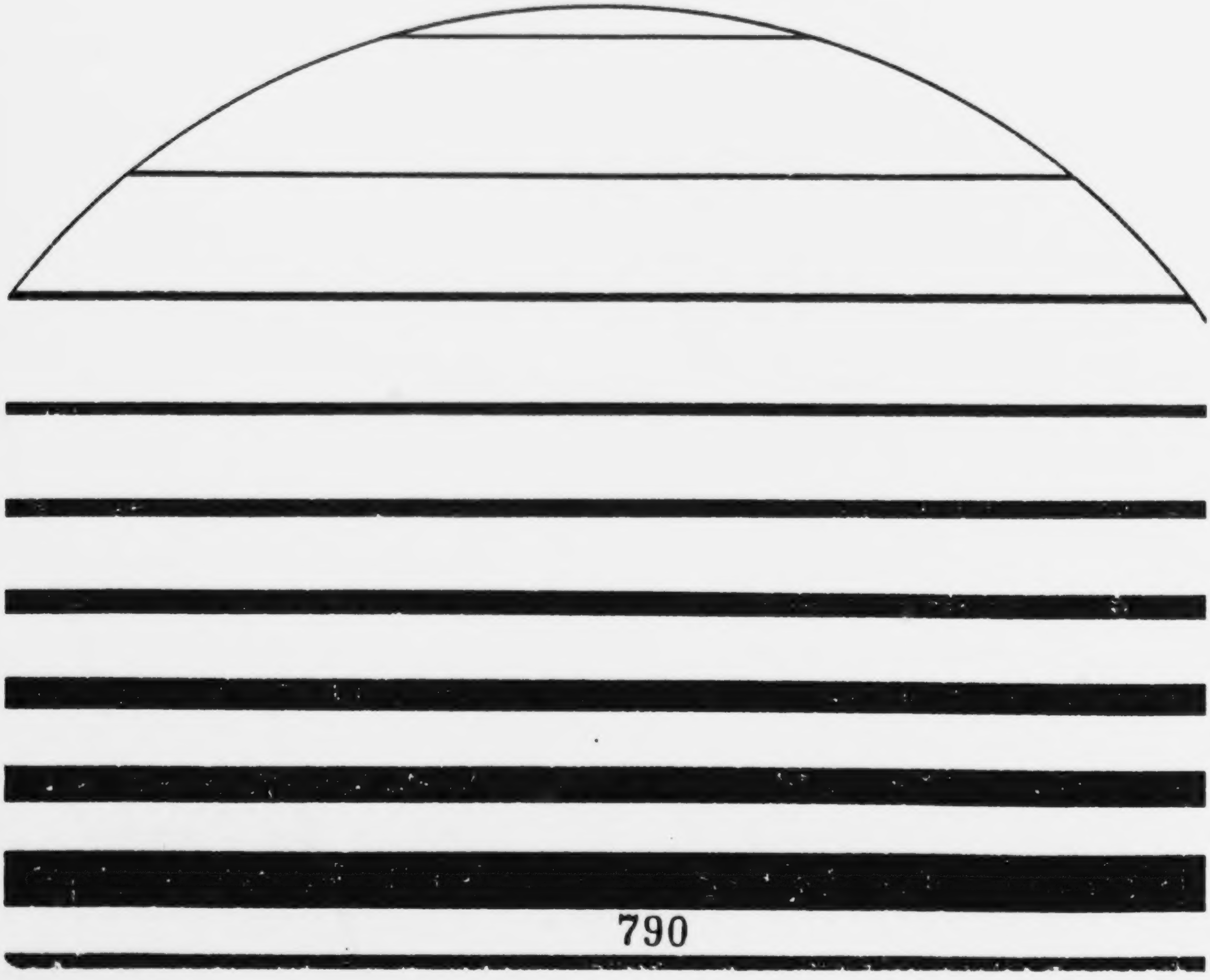

FRIDAY, 1100-1230

NEED FOR DEVELOPING HUMANISTIC VALUES IN THE TEACHING-LEARNING ENVIRONMENT: A PARADIGM SHIFT

Kishore Gandhi
Osmania University

While much of the contemporary educational thought and practices have gone into the issues of programmed learning, multi-media teaching and micro-teaching, no subject has been so much neglected as the development of humanistic values and creativity in the teaching-learning process. This is a subject deep, dark and full of promises and might provide a convincing alternative to the human race which is currently harrassed on hearing the sirens of prophets of gloom and doom, the prospect of a planet in peril, neantization, when an idiot hour can destroy what it has taken centuries to build. It, therefore, represents a profound challenge to the creative and evolutionary growth and should be education's first, if not the only, concern.

In an information-saturated society, there is considerable evidence, backed by empirical research and general studies, that academic specialisation and fragmentation of knowledge into discipline-bound curricula have reduced everything human to the state of a robot and man has become a cosmic or evolutionary dropout. His choice is between two hard possibilities, turning into a robot or becoming a responsible actor in the evolutionary process. Simply, a victim or a hero. The problems of life are neither disciplinary nor interdisciplinary but they go beyond the kingdom of values, which a Buddha, a Christ, a Mohammed, a Tagore, a Vivekanand and a Sri Aurobindo was able to actualize. In such a situation the question to which we have to address ourselves today is how to evolve new learning methodologies, humanized technologies and learning processes to accelerate the pace of development, to improve our degraded physical environment without dislocating the beauty of nature, and ensure an integrated development of man as a social organism. We have to treat this planet as though it were a living organism, with all the love and care and understanding which any living organism deserves. This is a delicate balance which we have to strike thoughtfully. Indeed, this balance has to be between technology and transcendence, science and insight and know-how and know-why.

In any analysis of the teaching-learning process, we should not overlook that education is a multi-dimensional process and must strive to enable the human mind to actualise its maximum potentials. It must build fundamental bridges between the world of objective observations and intellectual abstractions and what may be called the married world of immediate experience.

Perhaps the time has come when we must recommit and reaffirm to the task of probing in-depth the evolutionary image of man and society. While critically and creatively examining the major constraints in the existing teaching-learning process, this seminar will take up the issue of identification of viable educational units and components drawn from philosophy, comparative religions, the arts and literature, history of civilizations, pedagogy, natural sciences and social sciences which could be appropriately embedded or integrated in the existing depersonalised curricula and content of courses. This will call for a radical shift in our paradigm of reality -- from mechanistic and deterministic world view of Newton and Descartes -- to a holistic and ecological paradigm of reality furnished to us by modern physicists and thinkers: Einstein, Bohr, Schoedinger, Heisenberg and Prigogine. Hopefully, this approach will foster divergent and holistic thinking, creativity and innovative spirit, new sensitivity to environmental and cultural conditions and intuitive awareness among the student community.

This seminar will tentatively divide itself into five major groups. These are:

(i) Developing Humanistic Approach to Education: Theory and Practice:

(ii) Environment and Its Development; A Holistic Educational Approach to Environment;

(iii) Disarmament and Peace Education;

(iv) Social Education and Human Rights; and

(v) Emerging Images in Teaching Religion and the Arts.

FRIDAY, 1100-1230

NEED FOR DEVELOPING HUMANISTIC VALUES IN TEACHING AND LEARNING ENVIRONMENT - WHAT THE CURRICULUM CAN CONTRIBUTE

Mamidipvdi Gopalakrishnan
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Government of Andhra Pradesh

Human societies cannot do without moral codes, a major part of which have grown over the centuries. Religions of the world invariably contained and contributed to (perhaps) the birth and the growth of these codes. As a child, a human being observes and learns these codes in the formal school, and later in the college environments as well as in the school of life. The laws of the society and the state embody these precepts, give shape to them and in turn are reshaped by the changes in the people.

The nation and the world have been passing through a series of crisis which threaten to submerge civilization itself. A properly structured curriculum suitable to each society (and nation) is a major and potent source to influence the growth of the human mind.

There are certain eternal human values which can be built into the school and college curricula. Such values relate to interpersonal relationships, person to society relationships, person to state relationships and even human-to-other living being relationships.

In India, the traditions are hoary with age and the sages and great men of it have defined some of their great values. The governments of India and the states which have traditionally played a leading role in the educational systems of the country in the last hundred years are planning to give a concrete shape to these values. This is only just a beginning.

NEED FOR DEVELOPING HUMANISTIC VALUES IN THE TEACHING-LEARNING ENVIRONMENT: A PARADIGM SHIFT

ENVIRONMENT AND ITS DEVELOPMENT: EDUCATIONAL APPROACH

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Education is a multi-dimensional process and has to facilitate the process of actualisation of maximum potentialities of the individual so that he can develop harmonious relationships with himself, with the community, and laws of nature. It is only during the past few centuries, specifically during the post-renaissance period, that outstanding scientists like Newton, Galileo, Copernicus and a few other natural scientists and social scientists developed a paradigm of reality which was based on the mechanistic and deterministic view of man and society. The development of our political, social, educational, technological and economic institutions; systems and sub-systems occurred according to this dominant view. It was based on the assumption that only an accelerated rate of material progress and economic growth--without the scant regard to the limitation of natural resources--can bring about happiness and prosperity to the individual and society.

This is not the place to examine in-depth about the implications of science and technology during the historical perspectives; but the point which I would like to address to this gathering is that it is only when the negative aspects of science and technology had set in and started impinging on us with staggering magnitude that we realized our mistake. To put the issue explicitly, it is only when we were confronted with the serious problems of environmental pollution, ecological crises and exhaustion of our both renewable and non-renewable natural resources that we started looking before and after as to how to correct our developmental priorities so that we should not endanger our environment any further and endeavor to improve our existing impoverished human environment.

In this context, it is relevant to mention that all the world governments met at Stockholm under the auspices of the United Nations to take stock of the situation and to provide the corrective measures for improving our environment by shifting our developmental priorities. Opinions were sharply divided in the said conference ranging from one extreme to another; for example, calling for complete moratorium on further application of science and technology to the developmental process. This point of view was expressed by environmentalists and leaders of the developed societies. On the other hand, the leaders of developing societies argued that we need more science and technology for improving the physical conditions of our rural people and improving our impoverished rural environment. Poverty of the developing societies was viewed as one of the greatest pollutants to the human environment. It is only by striking a delicate balance between these two extreme views that we can develop an integrated and healthy attitude to the developmental processes of our environmental resources. This would call for reordering of our developmental priorities. Instead of following western technological models of development, the developing countries will have to learn from the experiences of the developed societies and to evolve the technological models which will be ecologically oriented and suited to the environmental and cultural needs of their societies. A new focus on the development of new sources of energy like solar, wind, tidal, and geo-thermal is needed to replace the replenishing non-renewable sources of energy.

It is against this background that we must restructure our educational system in such a way that it promotes a healthy holistic and integrated outlook towards natural resources. The post-Einsteinian physicists are speaking with one voice about the philosophy of interconnection, interdependence and holistic approach to life and the universe. If we have to meet the threats of future with firmness and foresight, we must have an educational system which should tell us how to live in accordance with laws of nature. Design with nature should be our motto. The Indian traditional literature and insights tell us the same identical truth.

VALUE ORIENTED TEACHING-LEARNING ENVIRONMENT IN SCIENCE AND TECHNOLOGY

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In spite of the origin of scientific thought in the philosophical persuits of scholars through the ages, the world of science tended to break off its metaphysical ties in the nineteenth century with the emergence of a philosophy of 'logical positivism'. This new mood of science was reflected in statements like 'that which cannot be measured is not real' (Max Planck).

The essential qualities for a real in-depth understanding and elucidation of science have been identified[1] as (i) relentless desire for the search of truth; (ii) capacity to analyse data and courage to dissent from the current ideology; (iii) tolerance arising not from indifference but derived from mutual respect; and (iv) feelings of humility and imperfection. These qualities, particularly the last one, are being continuously emphasized by inspiring teachers of science. The revealation that our most delicate techniques of measurement themselves[2] disturb the 'fact' sufficiently not to render it 'absolutely verifiable', has given to the scientific method an air of 'imperfection' which sounds like a human quality and has brought science nearer to the values which man has cherished for long. "Reducing the limits of imperfection and move towards perfection which is in itself unachievable until the observer and the observed merge in each other", is a dictum universally accepted in the highest form of scientific activity and is really so close to philosophical or religious beliefs in their most abstract forms.

A due emphasis on the humanistic values in the teaching-learning environment in this age of science and technology is strongly advocated for the development of a holistic and integrated attitude in the future scientist and decision-maker in the troubled world of today.

1. R.C. Mehrotra, Science and Technology in India during the coming decades 'Presidential Address, Indian Science Congress, Hyderabad, 1978.
2. J. Maddox, 'Observations and things observed', Nature, 308, 601, 1984.

FRIDAY, 1100-1230

THE NEED FOR DEVELOPING HUMANISTIC VALUES IN THE TEACHING-LEARNING ENVIRONMENT: A PARADIGM SHIFT

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Osmania University

Recent sociological studies have suggested the following seven dominant themes or value orientations that influence the whole fabric of Indian life styles:

1. Religious-cum-spiritualism
2. Dharma
3. Pluralism
4. Hierarchy in social life
5. Familistic individualism
6. Anasakathi or detachment
7. Change and progress

These value configurations have to be understood as having a tremendous impact on one another overlapping and influencing and often generating the others. It is also interesting to note that the impact of science and technology on Indian society has been so massive for the last two centuries that even in developing countries like India one can see and feel its impact in all aspects of life. Some of these values emanating out of scientific and technological advancement in the country are contradictory to the traditional value system creating a situation of crisis in values of the people. The most difficult task of Indian education has been the teaching of values in this transitional phase of our socio-cultural crisis. People look at schools, with the hope that the school will provide direction and teachers would act not only as transmitters of curriculum but also as agents of social change. Therefore, there is a growing need to evolve a set of values based on humanistic trends which could become a part of theory and practice of Indian education. The fact that the value system of the country classified in terms of seven dominant theories is so deeply engraved on the psyche of the masses, it is difficult to discard it completely. Instead, the concept of humanism could be initiated in Indian education both in theory and practice from the existing state of humanistic strains of Indian philosophy, reforming the obsolete aspect of it and integrating emerging scientific and human values. The curriculum making, the teaching-learning systems, the classroom interactions; the evaluation systems, etc., should reflect this "synthesis of values" which is only a solution to our growing social unrest in the country. It is, therefore, necessary to undertake an intensive academic exercise to integrate the humanistic trends in Indian education.

AN INVISIBLE COLLEGE RESEARCH PROJECT

Peter McKenna

National Institute for Higher Education, Dublin

(ABSTRACT)

High speed access to full text documents via keywords and abstracts may be a cost effective way to collaborate with or consult the work of colleagues in the field of improving university teaching. The papers and conference proceedings of IUT are central to an experiment which is being carried out over two years (1984-85) at NIHE Dublin in collaboration with 36 other instituions.

The purpose of the research is to demonstrate the technical and organizational feasahility of developing an electronic invisible college at an international level and to demonstrate the potential of information technology to foster development in this way.

The paper details the nature of the project, its different strands, its processes and phases. While summarising the project, it is hoped to report briefly on its progress to date at the Tenth IUT Conference.

AN INVISIBLE COLLEGE RESEARCH PROJECT

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1. INTRODUCTION

1.1 The Nature of the Project

The experiment is concerned with developing an electronic invisible college for the rapid delivery of grey literature. Invisible College refers to a group of third level educational users accessing and developing shared databases. It is an electronic college because the visible institutions to which the users belong have computers linked via the Irish Higher Education Network/EIRPAC and IPPS/EURONET.

1.2 Aim and Objectives

The aim of the experiment is to demonstrate the technical and organisational feasibility of an Invisible College operating across national boundaries.

The objectives of the project are threefold:

- to evaluate user acceptance of electronic document storage and delivery through the study of task-system match, ease of use, user support, and required role change

- to examine the problems of interconnecting different hardware installations and of using different software packages

- to study the problems of maintaining and merging distributed databases across national frontiers.

2. RESEARCH PROCESS

The experiment is to be carried out in three strands which have common

- general objectives,
- common evaluation procedures, and
- a shared database.

However the three strands have different

- specific objectives,
- contributions to the shared database, as well as
- hardware and software.

The general objectives shared by the three strands are those to which reference has already been made. The common evaluation procedures are:

- questionnaires
- interviews
- audit software.

The shared database is that resulting from the melding of the databases of the three strands, which can then be accessed by all users. The distinguishing objectives and database of each strand are now presented.

2.1.1 Strand A

Objectives.

The specific objectives of Strand A are as follows:

- to evaluate user acceptance of document storage and delivery by mainframe computers,
- to estimate the effectiveness of document storage and delivery by mainframe computers using, as far as possible, commercially available software,

- to measure database development and utilization across national frontiers,

- to measure the efficiency and effectiveness of an Office Automation system.

Database.

The database being established by Strand A is 2750 full text documents relating to the management of resources and of teaching and learning in third level education. Each document is about 10 A4 pages in length. The papers are made up of the conference papers and proceedings of the International Conference on Improving University Teaching, together with papers from interested specialists at Irish and British third level institutions.

2.1.2 Strand B

Objectives.

The specific objectives of Strand B are:

- to evaluate user acceptance of document development, storage and delivery on a low cost microprocessor network linking three institutions,

- to estimate the effectiveness of a cross institutional microprocessor network in leading to the collaborative development of grey literature,

- to examine performance gaps in hardware, software, and telephone/telecommunications - link delivery.

Database.

The database is in two parts. One is 150 full text documents and abstracts on the social and psychological aspects of information technologies, each of which is about 10 A4 pages in length. The other part is 2000 annotated bibliographic references on man-machine interfacing.

2.1.3 Strand C

Objectives.

There are two specific objectives of Strand C, namely:

1. to evaluate user acceptance of document storage and delivery on a microprocessor network linking different Haute Ecoles,

2. to measure the effectiveness of database development and

utilisation across institutions using journals, mail, telephone, floppy discs, telex and on-line communications.

Database.

These are two kinds of documents stored on the SEIP database -

1. 450 full text documents and abstracts of research findings on pedagogic innovations in French Hautes Ecoles,
2. 200 full text documents and abstracts on continuous education for engineers.

The first set of documents relating to pedagogic innovations have about 17000 characters and are in the form of "inventories". It has been agreed that for the purposes of the PINES database at NIHE Dublin the "inventories" will be expanded by printed reports to 20,000 characters, giving rise to the equivalent of about 10 pages of A4.

3. OUTCOMES

In an action research experiment such as this project, one cannot predict its full range of outcomes. This is part of the interest in the venture.

The experiment should throw light on user acceptance of electronic document storage and delivery. It should help to clarify the advantages/disadvantages of low cost microcomputer networks, mainframe networks, and the combination of both. It should indicate the potential value of an Office Automation system for educational institutions. It should make it clear whether an Invisible College of Users can achieve an efficient and effective exchange of grey literature across national boundaries.

4. CONCLUSIONS

Given the level of interest expressed in contributing documents to the project, and the desire expressed for informal association with the project, it would appear that at the end of the experimental period the network could well expand from existing institutions in France, Britain, and Ireland to other countries.

Apart from user interest in the content of the database, expansion will be facilitated by its simple structure which can readily incorporate keywords, abstacts, and full texts in other languages. The use of the Eudised Thesaurus as a guideline, now available in 8 languages, would help facilitate this expansion.

If users find the Invisible College more effective because it fosters collaboration between relatively small groups of users, then it may give rise to a number of small networks corresponding to user's interests and expertise.

Whether the future sees an expansion of the PINES database Invisible College or a proliferation of small specialist database networks, or both, the experiment should serve as a useful model of multi lingual document storage and delivery for commerical, industrial, and professional groups.

IUT participants who may be interested in storing relevant documentation on the database or who would wish to participate informally in the project are asked to contact me as Project Manager. Formal participation will be open to all interested parties at the end of the experimental phase - ie January 1986.

IMPROVING UNIVERSITY TEACHING: A MASTER'S DEGREE PROGRAM
A CASE STUDY

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Abstract

After more than fifteen years of experience in pursuing activities to improve University Teaching, the Universidad del Valle decided to consolidate this experience by developing a Master's Degree Program intended to offer opportunities for faculty members interested on improving teaching and academic quality in Higher Education. This program is refered as Master's Degree Programa in Education: University Teaching, PMDU.

Four assumptions have been formulated to sustain the design, development implementation and evaluation of the curriculum plan. The validity of these assumptions is to be tested throught the first implementation of the curriculum plan which will start on September 1984, with Engineers and Architects-Teachers.

This paper presents some aspects of the Curriculum Plan: the basic assumptions sustaining it, the basic estructure for the organization of teaching-learning contentes, the strategies for implementing the curriculum plan, some elements of control for "experimenting" (trying out) the curriculum plan, the state of development of the case study and a final comment.

Readers of this paper should take into account the implications and complexities of attempting to convey concepts and experiences developed trough a particular cultural setting and its languaje to a different languaje in different cultural contexts.

The PMDU is being developed within the context of Colombia but has been also designed to serve, participants from other Latin American countries. The PMDU is supported by the Organization of American States, OAS.

IMPROVING UNIVERSITY TEACHING: A MASTER'S DEGREE PROGRAM
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Julia Mora*
Universidad del Valle, Cali, Colombia

After more than fifteen years of experience in developing activities to improve University Teaching, the Universidad del Valle decided to consolidate this experience developing a Master's Degree Program intended to offer opportunities for Teachers interested on improving teaching and academic quality in Higher Education.

At present, the Universidad del Valle pursues activities to improve teaching at four levels: the Center of Resources for Teaching offers workshops for any faculty member interested on general aspecs of teaching: curriculum design, course design, teaching-learning strategies, evaluation of learning and teaching aids. Each School (Facultad) engages on specific activities to solve teaching problems related to concrete areas of knowledge or professional fields it develops. Master's programs, particularly on sciences and humanities include components on teaching strategies in their curriculum plans, to aid those students who will be teaching after graduating from this programs. Finally the Master's Degree Program on Education: University Teaching, PMDU ***, to be offered to groups of University Teachers of no more than two professional fields or areas of specialization. The curriculum of this program will be "experimented" (tryed out) with a group of Engineers-Teachers and

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** PMDU: Programa Magíster en Educación: Docencia Universitaria. The letter D stands for DOCENCIA. The meaning of this term trascends the concept of TEACHING; it ads to it the commitment of the faculty member to participate on reasearch not only on his area of specialization but on teaching on that area and to participate on curriculum administration activities.

Architects-Teachers from the begining of September 1984 *.
The purposes of the PMDU are the following:

- To train faculty members from institutions of higher education to be able to:
    - Generate, develop, manage and coordinate activities for faculty development on the area of teaching.
    - Advise, manage and coordinate activities related to the curriculum process and its administration.
    - Generate and participate on activities related to institutional development.
    - Design, develop and assist research activities on education.
- Develop lines of research established for the PMDU and identify or generate new lines.
- Publish and diffuse results of the work accomplished by participants and teachers during the development of the program.
- Support collateral activities which affect the quality of academic work at institutions of higher education.

This paper presents some aspects of the Curriculum Plan: the assumptions that sustain the design and development of the curriculum plan, the basic structure for the organization of teaching-learning contents, the strategies for implementing the program,some elements of control in "experimenting" the curriculum plan,the state of progress of the case study and a final comment.

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* The PMDU has been supported finantially by the Organization of American States. The OAS has made possible the participation of the author of this paper in the Tenth International Conference on Improving University Teaching.

ASUMPTIONS SUSTAINING THE CURRICULUM PLAN

The curriculum plan for the PMDU was designed by an interdisciplinary team*; it is a document whic includes: the justification and characterization of the program, a conceptual framework, general purposes, curriculum objectives, curricular structure, a basic structure for the organization of teaching-learning content, evaluation strategies, a plan for implementing the program, administration of the program, costs and finantial resources and a plan of activities for "experimenting" the curriculum plan with Engineers and Architects-Teachers.

The starting point for curriculum design was the construction of four assumptions. These assumptions were constructed throught a long debate by the curriculum design team. The assumptions were formulated as follows:

1. The Teaching-Learning process is an integrated process

This assumption rejects the idea of two distinct and autonomous processes: the process of teaching and the process of learning. The integrated teaching-learning process can be based upon different theoretical principles which underlie specific processes, procedures, strategies and instruments, according to different schools of thought regarding the teaching-learning processes and the degree of development of the field of knowledge to be taught-learned.

The teaching-learning process is assumed to have a basic structure integrated by six elements: the teaching-learning content,the teaching learning agents, the teaching-learning media, the teaching-learning products, the teaching-learning institutional and social context and the interacction betwen these elements to constitute the teaching-learning process. The characteristics of the interaction among these elements are determined by the theoretical point of view concerning the teaching-learning process and the nature of the area or field of knowledge to be taught-learned.

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* Victor Cruz, Juan E. León, Johannio Marulanda, Aldemar Valencia and Julia Mora (Team Coordinator).

2. Each fiel of knowledge adjusts* itself in a particular way to the teaching-learning process.

   This assumption requires to accept that different theoretical points of view concerning the teaching-learning process are not necessarily universal; they do not accept mechanical adjustments of all fields of knowledge to their principles, processes, procedures, strategies and instruments. It requires to accept also, that some fields of knowledge can adjust themselves better than others, to specific theoretical points of view concerning the teaching-learning process. Finally, it requires to recognize that each field of knowledge has its own organizational structure which in turn, affects the way the teaching-learning content in each field, adjusts itself to an specific theoretical point of view concerning the teaching-learning process.

3. In the process of adjustment of a particular field of knowledge to a particular conception of the teaching-learning process, the participant in the PMDU achieves a deeper comprenhention of that particular field of knowledge.

   The process of adjustment of a particular field of knowledge to a particular conception of the teaching-learning process requires the identification, understanding and grasp of the structure of that particular field of knowledge. Thus, the faculty member may be able to work a new sequence of principles to adjust to the teaching-learning model and the characteristics and purposes of program and course content

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* In Spanish the term "adecuación" seems to convey best the meaning.

4. Reaseach is an essential element in the educational process of the Participant.

Research in the PMDU is an essential element not only as a process to generate new information, knowledge, processes and methodologies, but as a process to "appropiate" information, knowledge, processes, or methodologies. As an estrategy, research would be developed on different levels of complexity according to the problems to be resolved and the needs of participants and the program.

In the development of the PMDU research is so important that the first implementation of the curriculum plan constitutes itself a research study.

The stated assumtions constituted the starting point for the construction of the conceptual foundations of the PMDU which is not included in this paper. Those conceptual foundations sustain the development of the program. The validity of these assumptions is to be tested through the first implementation of the curriculum plan.

BASIC STRUCTURE FOR THE ORGANIZATION OF TEACHING LEARNING CONTENT

The basic structure for the organization of teaching-learning content is constituted by four elements called LEVELS. The INSTRUMENTATION LEVEL is aimed at teaching-learning basic knowledge and methodologies to be instrumented for the development of the next three levels. Five course units have been organized into this level plus an integration and evaluation seminar. The five course units are related to: the specific field of work selected by each participant according to his basic field of especialization and interests; different conceptions of the teaching-learning processes; Tecnology of Education, Higher Education and its institutions in Colombia and other Latin American countries and methodology of academic work.

The LEVEL OF DIAGNOSIS (diagnosis as the activity to investigate carefully the nature and the functioning of something) is intended to study the characteristics and conditions of the teaching-learning process whithin the particular field of work selected by each participant. The research activity developed at this level is based upon the outcomes of the Instrumentation level. At the end of the level of diagnosis a new integration and evaluation seminar has been included.

The LEVEL OF APPLICATION is intended to give the participants opportunities to develop a research study based upon outcomes of the previous three levels or on new knowledge and/or methodologies. One of the results of this level is the Master's Thesis, a requirement to obtain the Master's Degree. At the end of this level a seminar is included to evaluate the total experience in developing the program on the basis of the assumtions that sustain the curriculum plan and its conceptual framework.

On the second, third and fourth levels, the students will work in small groups or individually.

ESTRATEGIES FOR IMPLEMENTING THE PMDU

The first time the program is implemented constitutes the opportunity to "experiment" the curriculum plan. The decision to "experiment" the program with Engineers and Architects-Teachers was based upon the results of a survey study on needs, motivations and resources of schools at the Universidad del Valle. Three criteria support the decision: needs, interests and possibilities of Schools,others than the School Education, to be involved in the development of the program.

The estrategy to implement the program includes:

- Advertisement of the Program through different media in Colombia and other Latin American countries.
- Reception of Applications.

- Pre-selection of candidates based upon the analisis of applications
- Interview with preselected candidates and application of interests tests
- Selection of candidates
- Pre-Program activities (4 weeks)
- Instrumentation Level (31 weeks)
- Level of Diagnosis (7 weeks)
- Level of Aplication (9 weeks)
- Level of Research (25 weeks)

The implementation of the program requires approximately 18 months of fu time work. Participantes should have a leave of absence from their institutions.

Criteria for the selection of candidates are formulated on the curriculum plan and they include: at least three years of teaching experience, a basic professional degree in Engineering or Architecture, certification of institutional support for the candidate, evidence of interest on improving the quality of academic work in higher education and evidence of sufficient financial means to support himself during 18 months.

Five candidates from Latin American countries will be acepted at this time; preference will be given to candidates from programs for improving teaching supported, or aided, by the Organization of American States, OAS, at institutions of Higher Education in different Latin American countries.

SOME ELEMENTS OF CONTROL FOR EXPERIMENTING THE PROGRAM

The administrative elements of control are related to consistency between the purposes of a program and social and educational policies, quality of the curriculum plan, availability of resources (human as well as financial and phisical resources) at the institutional as well as the national level. Other type of elements of control have been established to test the assumtions, the conceptual framework and the estrategies proposed to achieve the curricular objetives as well as the general purposes of the PMDU. The term "elements of CONTROL" refers to particular elements of the development of the program considered as determining aspects of the achievement of the purposes and curriculum objectives, based upon the stated assumptions and the conceptual framework of the program. The more relevant of these controls are the following:

- Internal consistency of the curriculum plan
- Internal consistency of instructional designs of content units
- Consistency between the curriculum plan and the instructional design of the content units, with relation to the assumtions sustaining the curriculum plan, the conceptual framework, purposes, curricular objectives, contents, teaching-learning estrategies and forms and instruments of evaluation
- Consistency between the instructional designs and the teaching-learning process.
- Quality of the products derived from the development of the program
- Characteristics of the administration of the program

Each of these elements are esential in the development of the PMDU.

STATE OF PROCRESS OF THE CASE STUDY

At present, several achievements could be pointed out:

- The curriculum plan, approved at the institutional as well as at the national level. The internal consistency of the plan was included on the process of its institutional evaluation
- The instructional designs of the content units are being developed. Six teams are working on this task assisted by the Curriculum Committe of the PMDU
- A research study is advanced on the charaterization of the conceptual framework which sustain the teaching-learning processes of teachers considered by students as "the best". The study is being developed

with Engineers-Teachers at the Universidad del Valle. It will be replicated with Architects-Teachers at the same institution. The results of this study will be used on designing the basic content unit at the Diagnosis Level.

- The PMDU has been advertised in Colombia and other Latin American Countries.
- The administrative structure for the PMDU has been established.

A FINAL COMMENT

The curriculum design and development of the PMDU have constituted a very significant experience for the team encharged of the curriculum design and administration of the program, as well as for the institution. The evaluation of the curriculum plan for the PMDU at the Universidad del Valle generated a heated debate around some of the basic concepts as DOCENCIA, and the assumptions sustaining the curriculum plan. Professors from the schools of Sciences and Humanities were opposed to the PMDU on ground that they consider as prioritary the training of specilists on areas of knowledge. This debate retarded the development of the program but permited the establishment of a Seminar on Improving University Teaching. This seminar meets, since 1979, once a week and works for two hours on topics related to DOCENCIA. At present, 15 faculty members from different schools at the university participate on the seminar; the problem of Creativity and Teaching in Higher Education is the current topic of discussion.

The results of "experimenting" the PMDU will be used in redisign or reorienting the curriculum plan if it is necessary; it will test the assumptions to allow for a more rigurous study on the topic. We expect to be able to report the final results of this experience in one of the future International Conferences on Inproving University Teaching.

FRIDAY 1430-1800

ABSTRACT

A NATIONAL STUDY ON THE DETERMINANTS AND CONSEQUENCES OF FACULTY STRESS AND COPING TECHNIQUES

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Background. Research conducted in recent years has produced a growing body of evidence that occupational stress adversely affects the productivity, performance, job satisfaction, and health of professionals. Those professionals involved in interaction with other people are more vulnerable to occupational stress than workers in product-oriented institutions. This fact is verified by studies of police, administrators, teachers, dentists, and other professionals.

Objectives. The purpose of the national faculty stress research project was to examine stress experienced by faculty in institutions of higher education. Specifically, it sought to fulfill the following objectives: (1) identify the job situations perceived by faculty as most stressful; (2) group these stressful job situations into interpretable clusters; (3) correlate significant relationships between perceived stress and personal and professional factors such as academic discipline, rank, tenure, productivity, sex, age, and experience; and (4) identify ways faculty cope with stress.

Method and Data Source. The instrument developed to identify sources of faculty stress evolved through a series of iterations, designed to insure that all relevant facets of job-related strain were explored. The sample was drawn from the population of all doctoral-granting institutions in the United States. From these 184 institutions, 80 were randomly selected (40 public and 40 private). Faculty within these institutions were stratified by academic rank and by Biglan's (1973) eight clusters of academic disciplines. From this stratification, 1,920 faculty members were selected. An initial response rate of 67.42 percent was adjusted for faculty members on leave, resulting in a net response rate of 75.28 percent.

Conclusions. The majority of these top stressors relate directly to time and/or resource constraints. By reviewing them, it is evident that much of the stress faculty experience might be alleviated with a reappraisal of institutional and individual capabilities and limitations. In spite of the current adverse economic, political, and fiscal climates, academic institutions and their employees are striving to accomplish the same goals with fewer resources. This paper will interpret the results of our study and provide practical solutions to the pressures of the professoriate. These findings serve as a useful first step in the design of appropriate measures to deal with faculty stress and productivity in our university settings.

BURNOUT: THE NEW ACADEMIC DISEASE

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Is Burnout a Disease?

Burnout, a faddish and threatening term in today's working place, has been labeled a disease reaching the level of an epidemic.

> Burnout runs through the teaching profession like Asian flue—possibly because it depresses people to be physically assaulted by those they are trying to civilize. Two years ago, Willard McGuire, president of the National Educational Association, said that burnout among reachers "threatens to reach hurricane force if it isn't checked soon." Social workers and nurses burn out from too much association with hopelessness. Police officers burn out. Professional athletes burn out. Students burn out. Executives burn out. Housewives burn out. And, as every parent knows, there usually comes a moment in late afternoon when baby burnout occurs—all of his little circuits overloaded, the child feels too wrought up to fall asleep (Marrow 1981, p. 84).

How serious is the problem of burnout in academe? Why do some burn out and others cope? Can burnout be prevented? Can academia survive burnout?

It has become apparent that retrenchment continues to be a way of life in academe. The situation is cause for alarm because faculty careers have been affected the most. Along with this trend, many individuals appear to have lost their identity with academe. Pressures originally leading to faculty stress will persist in the future; hence, institutions at this point need to become more aware of the effects of stress upon their faculty and administrators.

"Burnout: The New Academic Disease" is a report on research studies concerning stress factors leading to burnout and its affect on the academic personnel and environment. Historical and future perspectives are correlated to physical, psychological and sociological approaches and methods used to detect this syndrome.